

Artifact densities from STP's were plotted to determine the horizontal extent of the site.

Generally the site appears to be confined to the area above the 21.5 meter contour interval (Figure 5). The southwest corner of the site was not clearly defined since it was disturbed by a gravel road and lies outside the impact area. Likewise, the current alignment of ^{very broad} Route 214 obscures the northern boundary. North of Route 214 a sewer line runs parallel to the road, and a steep slope rises immediately beyond that.

The distributions of various classes of cultural material from the STP's were plotted in order to determine the locations of clusters. First, maps depicting flakes and fire-cracked rocks (Figure 4) show two main activity areas, one on the northern edge of the site and another toward the southern end. Flakes are dispersed across the entire site as well. Mapped by raw material (quartz, quartzite, rhyolite, and chert), flake distributions do not differ from the overall pattern, and are thus not illustrated.

Five diagnostic projectile points were recovered from STP's including Late and Terminal Archaic Piscataway, Lamoka-like, Bore Island, and Dry Brook Fichtel; and Late Woodland Savanna point-types. An additional untyped, probably Late Archaic, straight-stemmed point was recovered as well, along with 2 non-diagnostic point fragments. Figure indicates that the points are dispersed across the site. The Late Woodland point is in close proximity to the densest concentration of Late Woodland ceramics.

Ceramics from shovel test pits are scattered across the site (Figure 8), with concentrations in the center and southern parts of the site. When plotted by ceramic type according to period (Figures 9, ^{and 11 and 12} ~~and 10~~), most of the ceramic types are dispersed across the site, with no noticeable clustering. The only exceptions are the Late Woodland types (Potomac Creek, Townsend, and Moyaone), which show a tendency to occur in the central and southern portions of the site.

A comparison of the flake and ceramic distributions suggest a negative correlation between the two artifact classes except in the southern area, where there is a concentration of both.

RESEARCH GOALS + METHODOLOGY

PHASE II GOALS

Phase II testing at the Rattering Park site was designed to:

- 1) evaluate the horizontal and vertical extent of the site
- 2) determine the number of occupations
- 3) determine the integrity of deposits
- 4) evaluate the information potential and significance of the site, and its eligibility for listing in the National Register of Historic Places

PHASE II FIELDWORK METHODS + RESULTS

Phase II investigations were carried out from 12 April to 24 May 1983. The fieldwork consisted of controlled shovel test pitting^{Excavation} to determine site limits and artifact distributions, and excavation of controlled test units to evaluate stratigraphy and assess the potential for preservation of features and in situ cultural remains.

(STPs)
Shovel test pits were dug at five meter intervals ^{1 x 1 meter} along transects spaced 5 meters apart in 2 major blocks across the site. Pits were approximately 35 cm in diameter and were dug to sterile subsoil. Soils were sifted through 1/4" mesh screen and all cultural material^{was} retained. Stratigraphy was recorded in each pit before backfilling.

One hundred sixty-six STPs were dug (Figure —) across the site.

The soil profiles encountered in the shovel test pits showed the main body of the site underlain by either a strong brown sandy clay loam or a yellowish brown sandy clay loam, interspersed with pockets of strong brown or yellowish brown sandy loam and gravel, primarily on the north and south edges of the site. Sterile subsoil was encountered anywhere from 42 to 100 cm below surface; most around 60 cm.

In approximately 30 STPs, ground water was encountered before ^{the} subsoil was reached, varying from 22 cm to 73 cm below surface (most around 45-50 cm below surface).

Under the mixed wash and plowzone remnant layer is a strong brown sandy loam or sandy silt loam layer which varied from 17 cm to 35 cm in thickness, averaging 25 cm. ^{Prehistoric} Artifacts were retrieved from throughout this layer although they were most heavily concentrated near the top. With the exception of square #3, no modern material came from this layer (~~see Table 1~~). The demarcation between the "upper" and "lower" A₂ was only a slight leaching.

Test squares were excavated until a sterile level was reached. In six of the squares a B horizon was encountered; in four of them an argillic horizon, and in two a sand and pebble horizon. In the remaining five squares, the A₂ horizon continued and gradually became sterile of artifacts.

The termination depth of the squares varied from 40 cm to 83 cm, with an average depth of 58 cm.

Artifact distributions from the Phase II test excavations indicated a similar range of occupations to be present as detected by STP's. Diagnostic projectile points

Artifact distribution data from STP's was used to determine the placement of ten 1 by 1 meter excavation units, and one 1.5 by 1.5 meter unit. Areas shown to be disturbed by STP profile information were eliminated from testing. Figure 6 shows test excavation unit locations. Units were excavated to sterile soil

in natural layers, subdivided into arbitrary 10 cm levels where the natural layers were greater than 10 cm in thickness.

Units were assigned sequential numbers for identification

The test excavations uncovered no cultural features, however, the stratigraphy indicated that undisturbed artifact-bearing deposits were present.

In general, the typical soil profile consisted of 4 natural layers: a humus zone, buried plowzone remnant with wash layers and flood disturbances, a sandy silt loam layer, and a sterile B horizon consisting of either clay or sand and pebbles.

Modern historic artifacts were common in the topsoil which was present in all units but Square 7. Soil was a dark brown silt loam ranging from 3 to 14 cm thick.

The plowzone/wash layer had different manifestations in many of the units. The plowzone was clearly evident only in Square 3, although Square 7 had a plowscar. Flood disturbance and wash layers, however, were present in all units, along with mottling of the soil. Soil consisted of silt loam or sandy silt loam, sometimes with a gradation from a finer to coarser texture with depth. This mixed A horizon varied in depth from 5 to 21 cm, with an average depth of 10.5 cm. High densities of prehistoric artifacts were recovered from this soil horizon along with modern 20th century debris.

Acknowledgements

Funding for Phase II and Phase III investigations at the Kettering Park site was provided by the Maryland State Highway Administration.

Both projects were directed by Maureen Kavanagh. Field crew for Phase II consisted of Edward Chaney, Katherine Dinnel, + Spencer Geasey. Stephanie Crockett, Katie Dinnel, ^{Tim Doyle} Betty Leigh Hutchison, Bill Huser, Alison Helms, + Tim Sars made up the field crew for Phase III. Silas D. Hurry assisted in the planning and direction of fieldwork on the site in both phases. Janet Gelin

Artifacts from testing at the Kettering Park site were processed by Edward Chaney + Katherine. Subsequently, however, a new, ^{more detailed} computerized cataloguing system was developed by the Division of Archeology. This system was used in recording Phase III artifacts and completed by Carol A. Clough + Bill Huser. To make the data bases comparable + consistent, Phase II artifacts were re-catalogued by Carol A. Clough and Maureen Kavanagh. The ceramic analysis done for Phase II was expanded by Maureen Kavanagh and is reported in Appendix —. The pedological analysis of the site was carried out by Matthias Kondolf + appears in Appendix —.

Drafting of figures was completed by Edward Chaney, Katherine Dinnel, Lou Frige, + Alison Helms. Ammonium chloride smoking of artifacts and subsequent photography was done by

Tyler Bastian and Dennis Curry reviewed various drafts of this report. Elizabeth Winterstein typed the report and produced the final copy.

INTRODUCTION

This report details the results of archeological investigations undertaken by the Division of Archeology, Maryland Geological Survey at the Kettering Park Site (18 PR174), Prince Georges County, Maryland. This site will be impacted by the proposed dualization of Maryland Route 214. Archeological work ^{was} funded by the Maryland State Highway Administration in fulfillment of their obligations under Section 106 of the National Historic Preservation of 1966 (amended 1980).

The Kettering Park site was discovered and recorded in July 1979 as a result of a Phase I archeological reconnaissance of the Rt. 214 right-of-way (Epperson 1979). Phase II test excavations were recommended at this time, and were conducted by Maureen Kavanagh in April and May of 1983. Although a draft report of results was prepared, it was not released due to the imminence of subsequent Phase III mitigation excavations. Phase III data recovery was carried out in November and December of 1985 under the direction of Maureen Kavanagh and Silas Hurrey.

This report contains a synthesis of Phase II and Phase III field methodology, and analytical results. It includes a reanalysis of lithic and ceramic artifacts from all phases of the investigations.

These more extensive excavations were recommended ^{based on} data from testing indicating the probability that intact Early Woodland deposits were present at the site.

Although diagnostic ceramics types for the Early Woodland period are relatively well-defined, the situation is not nearly as clear for lithic artifacts.

The major projectile point types often regarded as diagnostic of this period -- Piscataway, Vernon, + Calvert -- have been subject of some controversy in recent years. The Kettering Park Site, with an intact remnant of an Early Woodland occupation defined by the presence of Accokeek ceramics may help to resolve this controversy.

The basis for much of the mid-Atlantic cultural sequence is derived from the Accokeek Creek Site located at the confluence of Piscataway Creek and the Potomac River. Stephenson's analysis of materials excavated by Ferguson resulted in the definition of ^{several} Early Woodland point types, namely Vernon, + Calvert. The type definitions are based on large samples, and dated by ceramic associations and cross-site comparisons. Regrettably, no carbons-14 dates are available as the site had been excavated in its entirety prior to development of this dating techniques.

Analysis of features contents revealed Vernon points and Rose Island points clearly associated with the earliest mid-Atlantic prehistoric pottery -- stoneware tempered Marcey Creek ware. The latter point appears to be a holdover from the earlier Late and Terminal Archaic periods, and has been found in clear pre-ceramic contexts elsewhere (Kinsey 1959, Brothkamp et al 1982). Stephenson noted the close relationships between Calvert + Vernon points and included the former in the Marcey Creek component.

Although originally defined as Middle Woodland by Stephenson, later researchers have placed sand-tempered Accokeek ware in the Early Woodland period (Potter 1984, Gardner 1982). Associated projectile point types recorded rather equivocally by Stephenson include Vernon, Calvert and untyped forms similar to Coc's (1964) Guildford, Astabula points, and _____.

Middle Woodland Pope's Creek Ware, defined by Stephenson as Early Woodland, had unclear projectile point associations. Stephenson noted that Calvert, Vernon, Bare Island, Clagett, + Rossville points may all be part of the Pope's Creek component assemblage. No non-ceramic artifacts were listed in association with Mockley ware, an unburned, crushed oyster shell tempered pottery definitively dated to the Middle Woodland period.

Potomac Creek ware is diagnostic of the Late Woodland Period. Stephenson found the triangular Potomac Creek point with this ceramic type, recognizing that it was similar to, if not identical with, Savanna points found elsewhere in the Northeast. Stephenson also defined the Piscataway point as a Late Woodland diagnostic artifact, a conclusion which has not been substantiated at other sites.

Subsequent to the investigations and analyses of the Accokeek Creek Site, both Stephenson's ceramic & projectile point attributions have been somewhat revised.

20 Jun 85

Laureen:

A principal problem is that the justification for an Accobeech component seems diffused through the report and in some ways is not clearly presented. It appears from figs 6 & 9 and table 1 that the main concentration of Accobeech is in the age 5-10 in the west central part of the site (#6 being an exception), but the area you propose to ~~study~~ ^{sample w/ 2x2 m squares} is mostly east of this area where Accobeech occurs. (Also, the study area outline in fig. 18 is different from most other figs).

It may help to reorganize the report so all the data (soils, natural strata, artifacts) are presented first, and then integrate the data in a chapter on intra-site comparisons.

All in all a good report, but requires more work, I fear.

And SH A is breathing down a back

Sh

FILE REPORT NO.

AND DATA RECOVERY

ARCHEOLOGICAL TESTING AT THE KETTERING PARK SITE
(~~18 PR 174~~), PRINCE GEORGES COUNTY, MARYLAND

by

Maureen Kavanaugh

with contributions by G. Matthias Kordolf and Katherine Dinnel

Report submitted to the Maryland State Highway Administration
Project No. AA ~~936-151-512~~



#2

1985

1984 1986

①

DEPARTMENT OF NATURAL RESOURCES
MARYLAND GEOLOGICAL SURVEY
DIVISION OF ARCHEOLOGY

FILE REPORT NUMBER _____

PHASE II ~~XX~~ ARCHEOLOGICAL INVESTIGATIONS AT THE KETTERING PARK SITE
(18PR174), PRINCE GEORGES COUNTY, MARYLAND

BY

MAUREEN KAVANAGH

Controlled

Report submitted to the State Highway Administration
Project Number



1985

*Maureen
Please return this
copy w/ my notes to me
along w/ next version*

*Why was area outside
the R-O-W tested?
Are site boundaries really
very clear?*

ABSTRACT

Phase II archeological investigations at the Kettering Park site
consisted of (18PR174) ~~included a grid~~ of shovel test pits at 5-meter intervals, *to determine site limits,* and eleven controlled test units, ~~within a proposed highway right-of-way.~~

~~The shovel test pits aided in determining site limits.~~ The controlled test units revealed an Early Woodland (Accokeek) component 25-35 cm below surface, undisturbed by plowing. Pedologic analysis corroborated the

accretion of sediments enabling burial of cultural material. The Kettering-Park site is considered to be a significant archeological resource *eligible for nomination* ~~based on its scarcity, integrity and research potential.~~ Recommendations are made *to the National Register* for ~~(1) avoidance, or (2) mitigation.~~

due to its stratigraphic ~~the integrity of the buried~~ *resultant* ~~research potential~~ *in this* ~~for~~ *affords.*

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ACKNOWLEDGEMENTS

Funding for the Phase II testing at the Kettering Park site was provided by the Maryland State Highway Administration. Special thanks go to co-worker Silas Hurry, who assisted with research design, fieldwork organization, and assessment of the site. Edward Chaney, Katherine Dinnel, and Spencer Geasey served as a dedicated field crew. Laboratory work was undertaken by Katherine Dinnel and Edward Chaney. In addition, Katherine Dinnel analyzed the ceramics; the results are tabulated in Appendix II and summarized in the report. Illustrations were a group effort: Edward Chaney, Silas Hurry, Lori Frye, and Katherine Dinnel all contributed; photographs were taken by Silas Hurry. The pedological analysis was performed by Mathias Kondolf, whose findings are in Appendix I.

In addition to all those individuals mentioned above, thanks go to Tyler Bastian and Dennis Curry for reviewing the draft of this report and making helpful suggestions for its improvement, and to Elizabeth Winterstein for typing the report.

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INTRODUCTION

The Kettering Park aboriginal site (18PR174) was recorded by Terrence W. Epperson in 1979 during a Phase I archeological reconnaissance for the State Highway Administration along Route 214 in Prince Georges County, Maryland. A proposed dualization of Route 214 would extend the roadway approximately 40 meters southward, subjecting the site to impact. Epperson (1979) recommended Phase II archeological testing in order to assess the nature, extent, and integrity of the site.

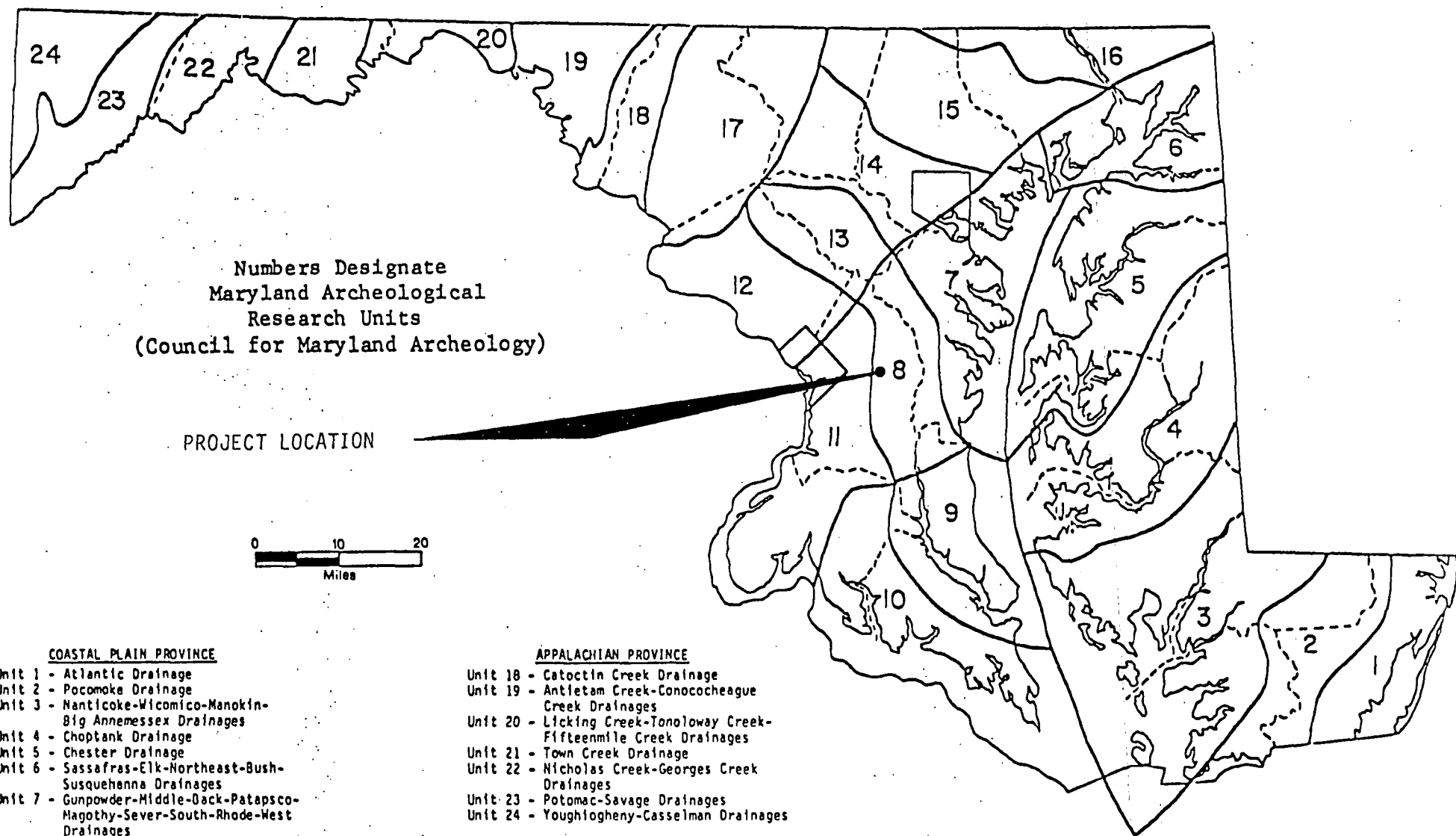
ENVIRONMENTAL CONTEXT

The ~~Kettering Park~~ site is located in the western shore division of the Coastal Plain physiographic province (Vokes and Edwards 1974:37) approximately 17 km (10.5 miles) south-southeast of the fall line (Figure 1). It is situated on a low terrace northeast of the confluence of the Western Branch and the Northeast Branch (both ^{third} ~~3rd~~ order streams) in the Patuxent River drainage, approximately 22 ^{meters} ~~ft~~ above sea level. The site is about one meter above the watercourses and is subjected to seasonal flooding. The site is currently used as a park and picnic area, and is lightly forested, primarily with beech trees of 30-50 cm diameter. Erosion of the site is suggested by mounds of soil deposited around the bases of some trees and the exposed roots of others.

Map research has suggested that the site was heavily forested during the 20th-century until very recently. The early 20th-century U.S.G.S. 15' Washington East topographic quadrangle shows no structures or roads nearby. The 1938 aerial photo shows no evidence of farming or clearing. However, as Kondolf describes a plowzone for this site it evidently was farmed at sometime in the past (perhaps in the 19th-century) (see Appendix I).

The stream beds of the Western Branch and the Northeast Branch were channelized sometime between 1965, when the base map for the U.S.G.S. 7.5' Lanham Quadrangle was prepared, and 1979, when the map was photorevised (Figure 2). Figure 3 depicts the former and present channels in more detail.

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COASTAL PLAIN PROVINCE

- Unit 1 - Atlantic Drainage
- Unit 2 - Pocomoke Drainage
- Unit 3 - Nanticoke-Wicomico-Manokin-
Big Annemessex Drainages
- Unit 4 - Choptank Drainage
- Unit 5 - Chester Drainage
- Unit 6 - Sassafras-Elk-Northeast-Bush-
Susquehanna Drainages
- Unit 7 - Gunpowder-Middle-Back-Patapsco-
Magothy-Sever-South-Rhode-West
Drainages
- Unit 8 - Riverine Patuxent Drainage
- Unit 9 - Estuarine Patuxent Drainage
- Unit 10 - Estuarine Potomac Drainage
- Unit 11 - Riverine Potomac Drainage

PIEDMONT PROVINCE

- Unit 12 - Potomac Drainage
- Unit 13 - Patuxent Drainage
- Unit 14 - Patapsco-Back-Middle Drainages
- Unit 15 - Gunpowder-Bush Drainages
- Unit 16 - Susquehanna-Elk-Northeast
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- Unit 17 - Monocacy Drainage

APPALACHIAN PROVINCE

- Unit 18 - Catoctin Creek Drainage
- Unit 19 - Antietam Creek-Conococheague
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- Unit 20 - Licking Creek-Tonoloway Creek-
Fifteenmile Creek Drainages
- Unit 21 - Town Creek Drainage
- Unit 22 - Nicholas Creek-Georges Creek
Drainages
- Unit 23 - Potomac-Savage Drainages
- Unit 24 - Youghiogheny-Casselman Drainages

Fig 1

LANHAM QUADRANGLE
U.S.G.S. 7.5 MINUTE SERIES

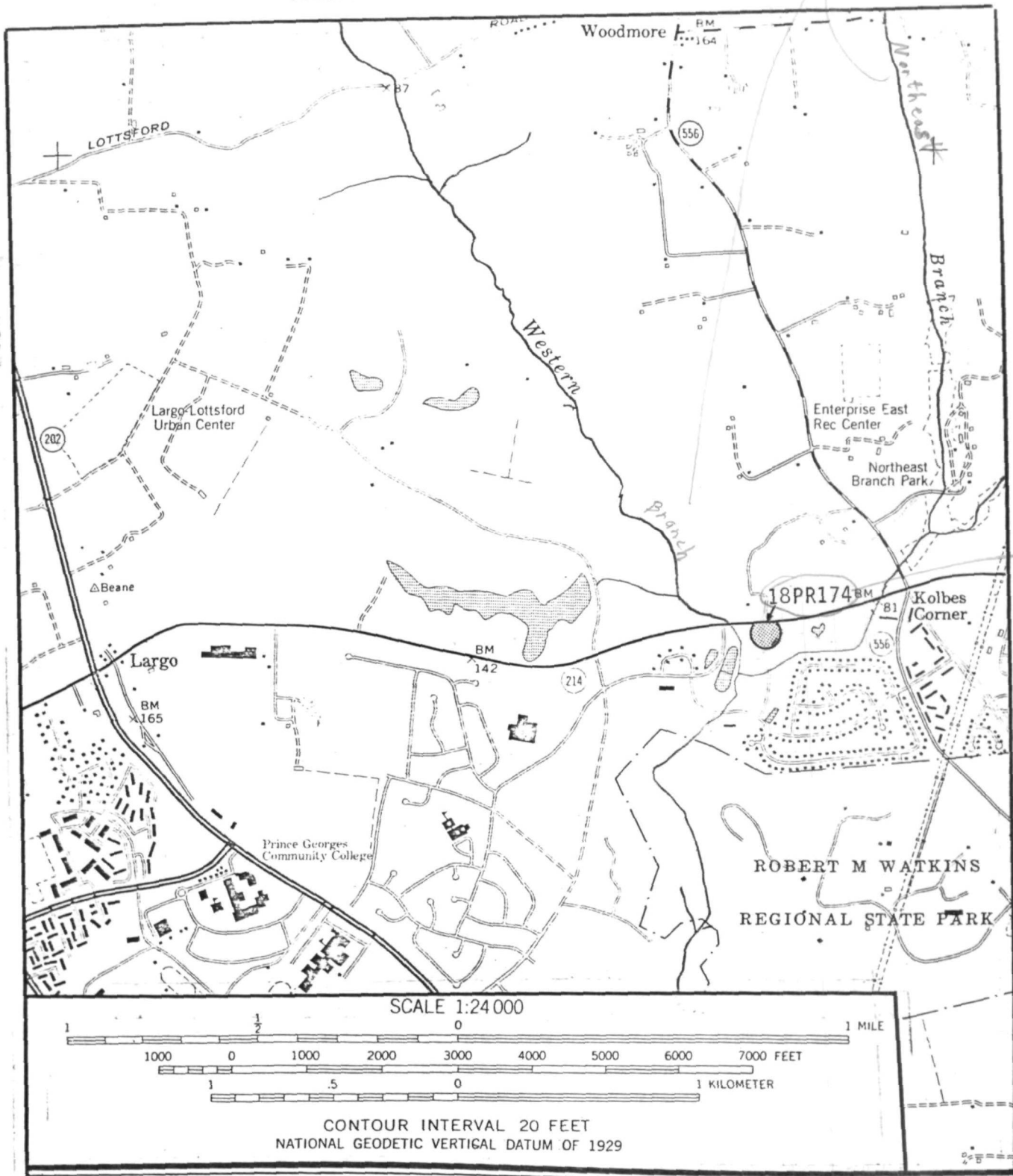


Figure 2



- - - - - = proposed right-of-way
- . - . - = former channels
- = 18PR174
- ☁ = trees

solid line on map? ← →?

Text should include note that mill is a repro

Scale = 1:2400

Figure 3

The site's first terrace elevation and its proximity to both branches has subjected the site, ~~particularly its edges~~, to flooding, causing deposition ^{along the edges.} and ~~admixing~~ of stream sediments ^{at} and erosion. These effects are considered in detail in the geomorphology study (Appendix I). ✓

PALEOENVIRONMENTAL CONTEXT

The study area has been subjected to a series of climatic changes over the last 10,000 years which has resulted in concomitant shifts in hydrology, topography, and the dominant flora and fauna. During the last glacial advance at approximately 10,000 B.C., the sea level was as much as 100 to 105 meters (325-341 ft.) below current levels. All of the extant estuarine areas, including the Chesapeake Bay, were fresh-water riverine systems. From about 10,000 B.C. to 6000 B.C. the sea level rose rapidly, at a rate of about one meter per century. Between 6000 and 1700 B.C. it slowed to 0.3 meters/century (Kraft 1976:97). The gradual slowing of the rate of inundation led to the stabilization of the brackish-water estuaries, probably sometime around 4000-3000 B.C. (Wilke and Thompson 1977). The hydrologic changes described above would most likely have had only an indirect impact on this site, although the site may have been subject to more deposition of sand and silt as stream gradients decreased.

A warming trend in the climate succeeded the glacial epoch. From about 8500 to 6500 B.C., the climate changed from cold and moist to cool and drier (Carbone 1976). Vegetation changed from tundra-like conditions to primarily coniferous forests with some deciduous elements. Temperature continued a basic warming trend until it reached a maximum around 2300 B.C. This warm, dry period is referred to as the xerothermic (or altithermal). Sometime prior to this, probably by about 4000 B.C., the deciduous forest became dominant, replacing the conifers. The first occupation of the Kettering Park site coincides with the stabilization of the estuaries and the establishment of deciduous forests. From 2300 B.C. to the present the trend has been to slightly cooler, moister conditions, with only minor fluctuations in native floral elements.

ARCHEOLOGICAL CONTEXT

The prehistory of the Middle Atlantic region can be divided into three broad periods: the Paleoindian, the Archaic, and the Woodland.

The Paleoindian period ^{dates} from approximately 11,000 to 8000 B.C., is represented at a few sites, most notably Thunderbird in the Shenandoah Valley (Gardner 1974) and Shawnee-Minisink in the Delaware River Valley (McNett 1974, 1975). Isolated finds of characteristic fluted points indicate the presence of Paleoindian populations in Maryland (Brown 1979) and throughout the Middle Atlantic (Brennan 1982). It is postulated that Paleoindian populations were small, and that subsistence needs were met by large game such as mammoth, mastodon, sloth, caribou, moose, bison, as well as a variety of smaller mammals, fish, and plant foods. *and*

The Archaic period dates from approximately 8000 to 1000 B.C. During this time span the populations gradually increased. Subsistence activities changed as did available resources; deciduous forest-inhabiting mammals such as bear, deer, and elk became the dominant hunted resources, while estuarine resources of fish, seafood, and waterfowl figured prominently in the prehistoric diet after 3000 B.C. This period is recognized primarily by characteristic side-notched, basal-notched, and stemmed projectile points which have been dated in context along the Atlantic seaboard (cf. Coe 1964; Kinsey 1972; Ritchie 1971). Toward the end of the Archaic, axes, adzes, and stone bowls appear in the artifact assemblage, possibly indicating a more sedentary existence. *X*

The Woodland period ^{dates} spans from about 1000 B.C. when pottery is first introduced, to the time of European contact, ca. A.D. 1600. This period was probably a time of intense change in subsistence activities and social interactions and organization. Early Woodland site locations suggest a more sedentary, riverine-oriented lifeway than was the case during the Archaic, and there may have been more reliance on aquatic resources and perhaps cultigens such as amaranth and sunflowers. A noticeable subsistence change *✓✓*

was the introduction of agriculture by around A.D. 1000. Many Late Woodland populations lived in permanent or semipermanent villages, and grew maize, beans, and squash. Outlying temporary or short-term camping sites also occur.

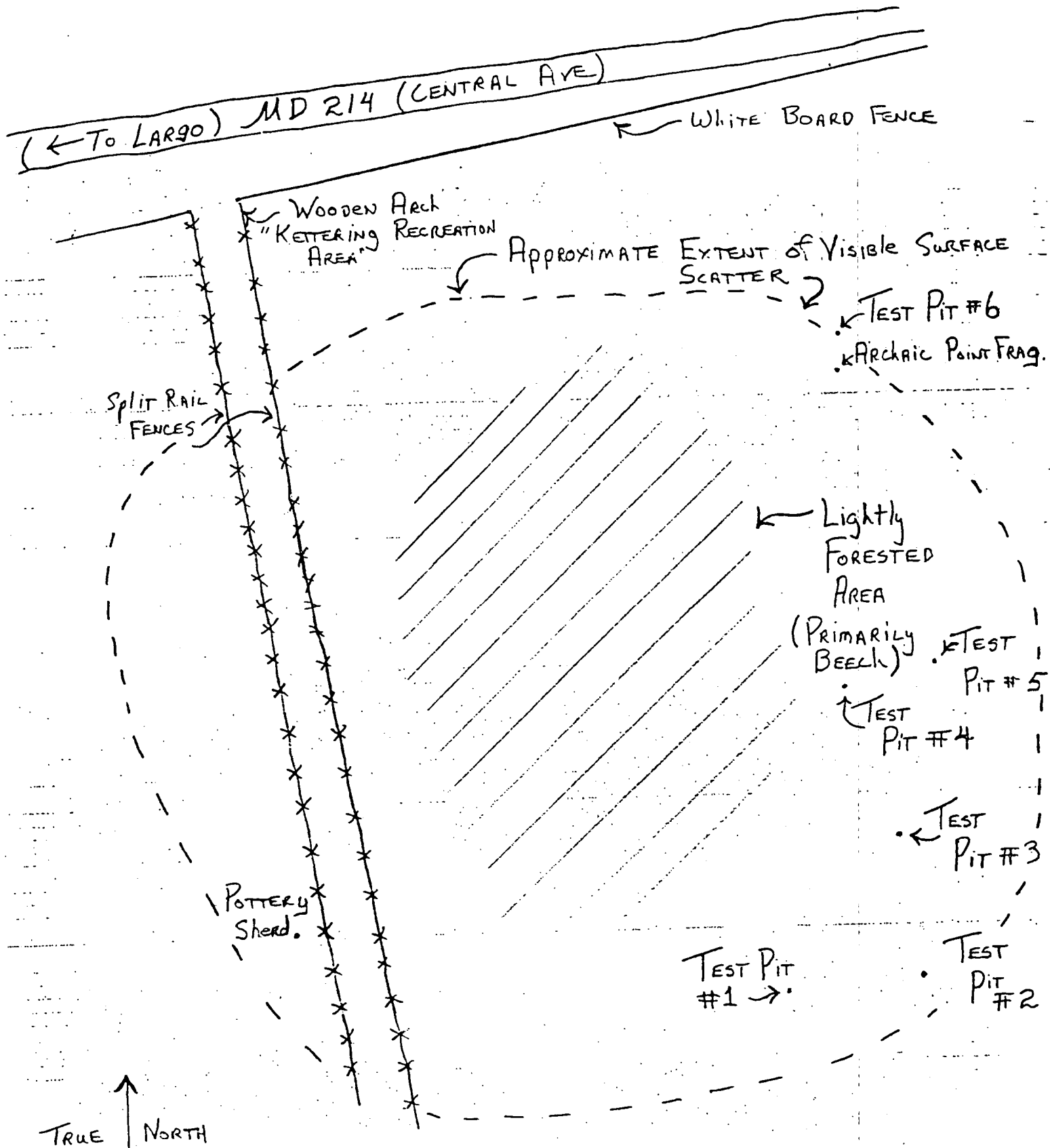
PREVIOUS RESEARCH

The Kettering Park site was located by Terrence W. Epperson, Dennis Curry, and Spencer O. Geasey during an archeological reconnaissance of the Maryland Route 214 corridor in July, 1979 (Epperson 1979). Surface visibility was about 60%, allowing surface collection of diagnostic artifacts and representative debitage. In addition, six shovel test pits were excavated, with all material screened. The pits were 45-60 cm in diameter and 45-60 cm in depth. According to Epperson, most of the cultural material seemed to come from the interface between the top, darker humus layer and the lower, more reddish and sandy layer. The approximate locations of the shovel test pits are depicted in Figure 4 (from Epperson 1979). Material recovered from the pits consisted of quartz-tempered and shell-tempered ceramics, quartz, quartzite, rhyolite, chert, and jasper debitage, one quartz biface, and a possible hammerstone. Artifacts recovered from the surface were sand-tempered pottery, ^{two} triangular quartz projectile points, ^{one} expanding stem quartz projectile point, ^{two} quartz biface fragments, ^{one} chert biface fragment, and chert, quartz, and quartzite debitage. Vernon?

Based on the material retrieved from the testing, Epperson postulated a primary Late Woodland component at the site. However, a reanalysis of the Phase I material by the present investigator shows 10 Accokeek sherds, and 2 sand-tempered (Early Woodland?) sherds, in ^d addition to the Late Woodland material identified by Epperson. A Vernon point dating to the Late Archaic was also recovered. Together the material suggests periodic reoccupation of the site from the Late Archaic through the Late Woodland. ✓

in addition to the one Perry reported?

T. Wagon?



THE KETTERING PARK SITE 18-PR-174
T. EPPERSON 27 July 1979

(14)

SCALE
1 IN = 30 FT

Fig 4

FIELD WORK

Phase II investigations were carried out from 12 April to 24 May 1983. The fieldwork consisted of controlled shovel test pitting to determine site limits and artifact distributions, and excavation of controlled test units to evaluate stratigraphy and assess the potential for preservation of features and in situ cultural remains.

Shovel test pits were dug ^{in a grid?} at five-meter intervals across the site (Figure 64). [#] Limits to the site were found ~~to the east, south, and west.~~ ^{except where} The current alignment of Route 214 obscures the northern boundary. North of Route 214 a sewer line runs parallel to the road, ^{but} ~~and~~ a steep slope rises immediately beyond that, ^{probably defines the northern limit.}

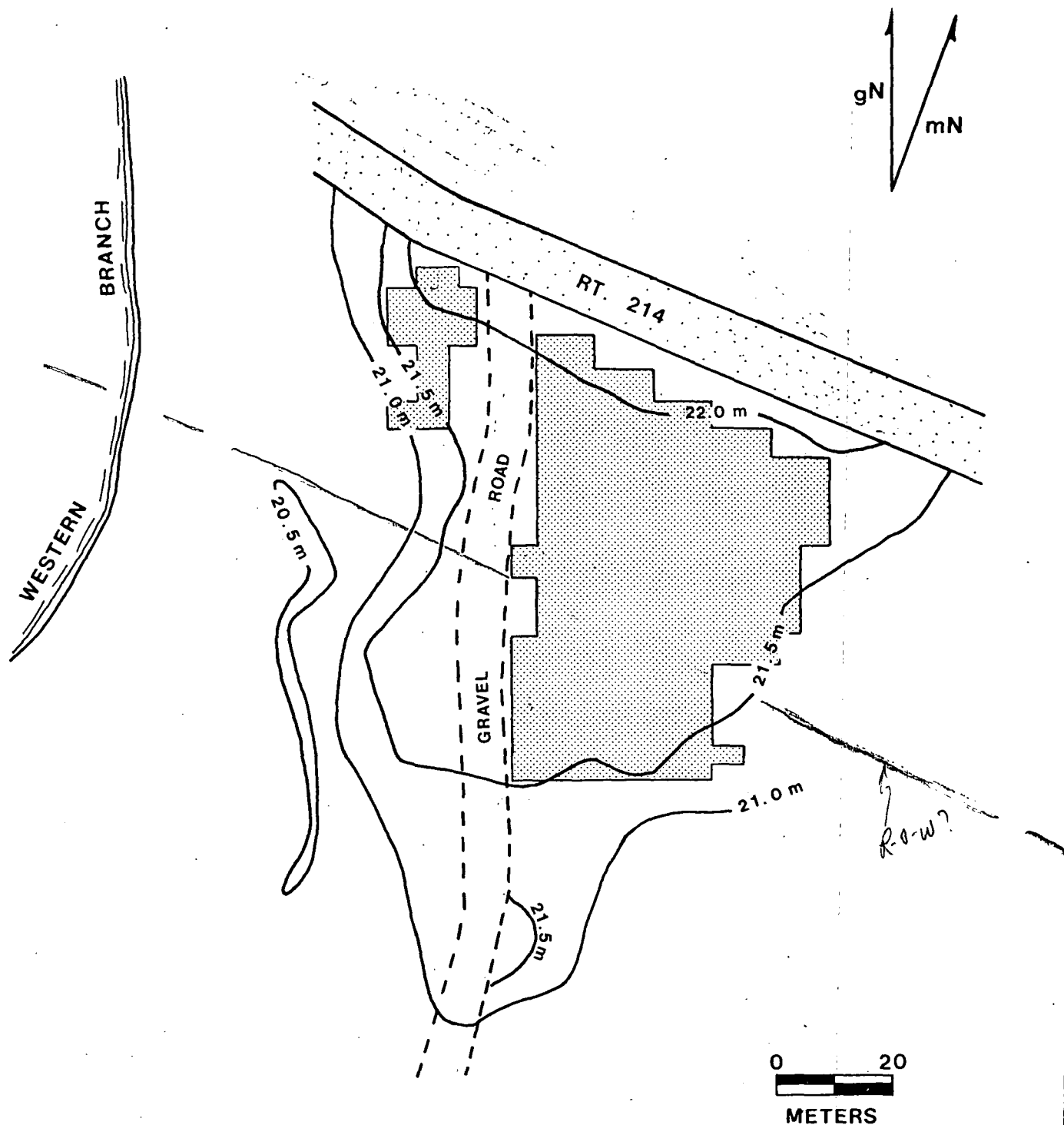
← Generally the site limits, as determined by Phase II testing, are confined to the area above the 21.5 meter contour interval (Figure 5). The southwest ^{#7} corner of the site was not clearly defined since it was disturbed by a gravel road and lies outside the impact area.

Shovel test pits (166 total) were approximately 35 cm in diameter and were dug to sterile subsoil (anywhere from 42 to 100 cm below surface; most around 60 cm). Soils were sifted through 1/4" mesh screen and all cultural material retained. Stratigraphy was recorded in each pit before backfilling. In approximately 30 STPs, ground water was encountered before subsoil was reached, varying from 22 cm to 73 cm below surface (most around 45-50 cm below surface).

✓ Following the shovel test pitting, areas were selected for controlled test excavations based on artifact distributions and stratigraphy. Ten one-meter ^{squares} ~~squares~~ and one 1.5 by 1.5 meter unit were excavated (see Figure 6 for locations). These were excavated in natural layers, subdivided into arbitrary 10 cm levels where the natural layers were greater than 10 cm in thickness.

basis needs to be more specific

Explain what was used for datum and permanent grid references.

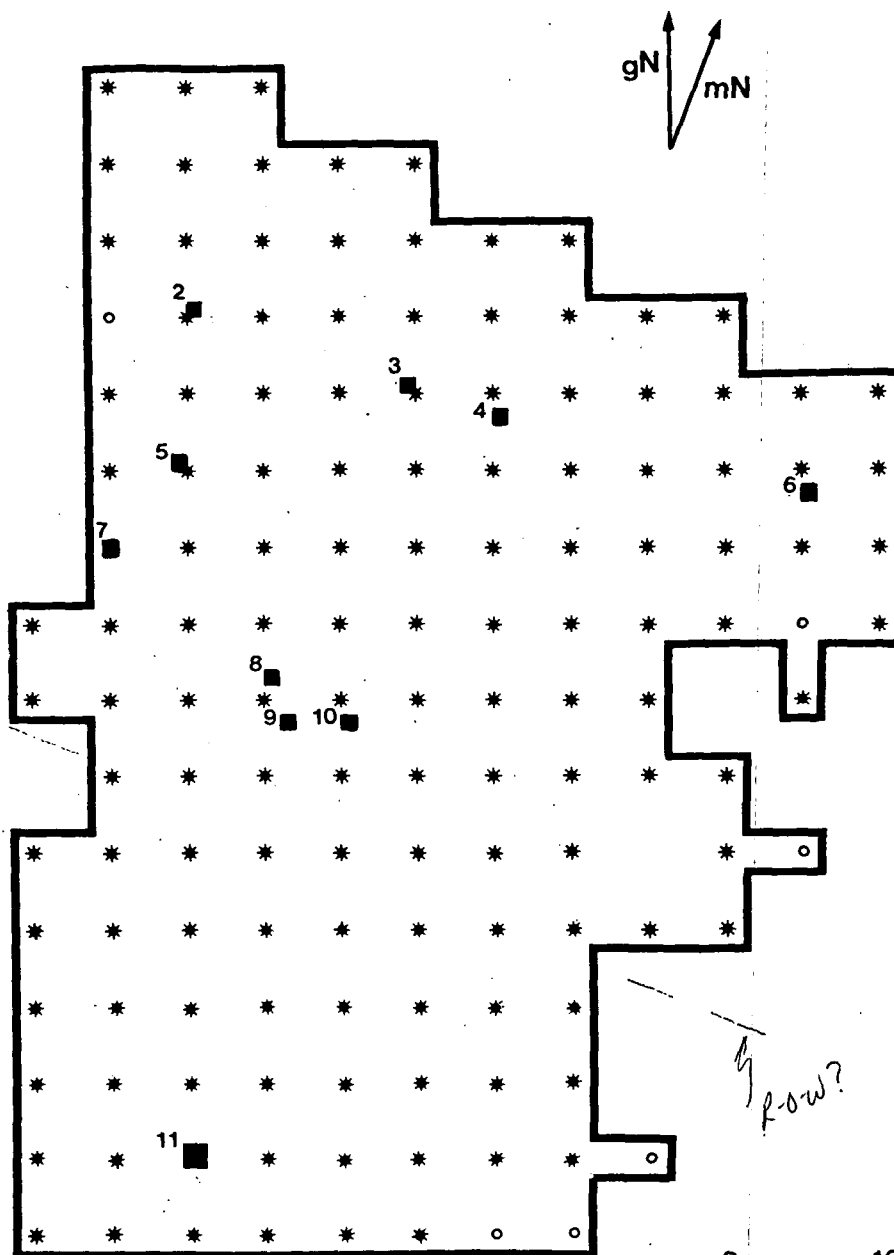
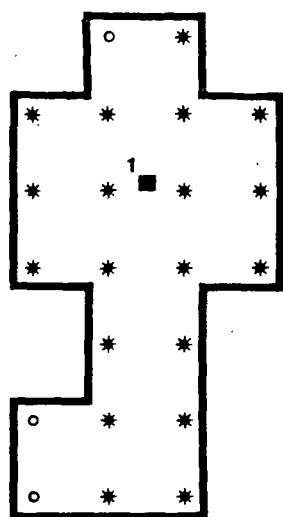


Area of Investigation

Contour Interval is 0.50 Meter

All Elevations are ASL

Fig 5



Shovel Test Pits

* Cultural Material Present

o No Cultural Material

Controlled Test Units

make same size as 1x1 m units.

Fig. 6

Pedologic studies were undertaken by G. Mathias Kondolf during three visits to the site. His report is attached as Appendix I.

ARTIFACT DISTRIBUTIONS

The distributions of various classes of cultural material from the shovel test pits were plotted in order to determine the locations of clusters. ~~These maps depicting~~ ^{Flakes and fire-cracked rocks} (Figure 7) show two main activity areas, one on the northern edge of the site ^{study area} and another toward the southern end. ~~Flakes are dispersed across the entire site as well~~ ^{mapped by} raw material (quartz, quartzite, rhyolite, and chert), ~~flake distributions~~ do not differ from the overall pattern, and are thus not illustrated.

Ceramics from shovel test pits are scattered across the site (Figure 8), with concentrations in the center and southern parts of the site. ^{study area} When plotted by ceramic type according to period (Figures 9, and 10), ^{and 11, and 12} most of the ceramic types are ~~dispersed across the site~~ ^{exhibit} with no noticeable clustering. ~~The only exceptions are~~ ^{the exceptions which usually cluster in the north central and south areas, and} the Late Woodland types (Potomac Creek, Townsend, and Moyaone), which ~~show a tendency to occur in the central and southern portions~~ ^{cluster in the} of the site ^{study area}.

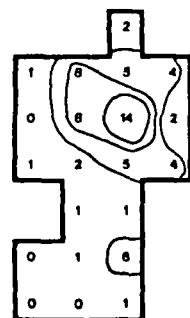
A comparison of the flake and ceramic distributions suggest a negative correlation between the two artifact classes except in the southern area, where there is a concentration of both. ^{Significance?}

The distribution of projectile points from shovel test pits and meter squares is shown in Figure ¹³ ~~12~~. An examination of the distributions indicates a dispersal of individual types across the site, again ^{with a lack of} ~~lacking any~~ spatial clustering. The periods represented through these tools include Late Archaic (9), Terminal Archaic (5), and Late Woodland (5). ~~A summary of points are summarized~~ ^{The} ~~recovered is~~ in Table 5. ^{Both traditions are in south of L. Woodland pottery.} ^{where is it?}

Based on these maps, no components were identified by artifact clusters ~~defined at the site~~; rather, the material is assumed to be from a mixture of components ranging from the Late Archaic through the Late Woodland.

61

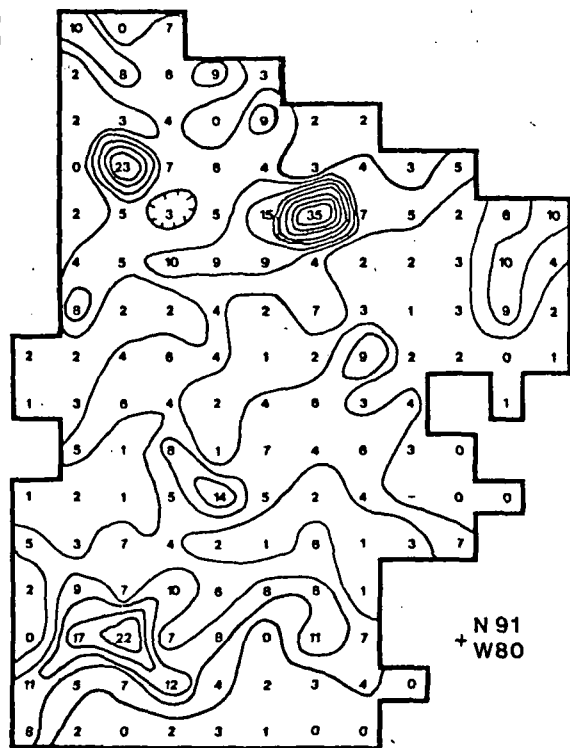
TOTAL LITHICS FLAKES



N 121
W 140 +

3 3

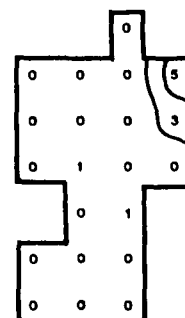
gross
Isobar Interval =
4 Artifacts



N 91
W 80 +

0

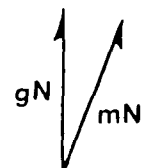
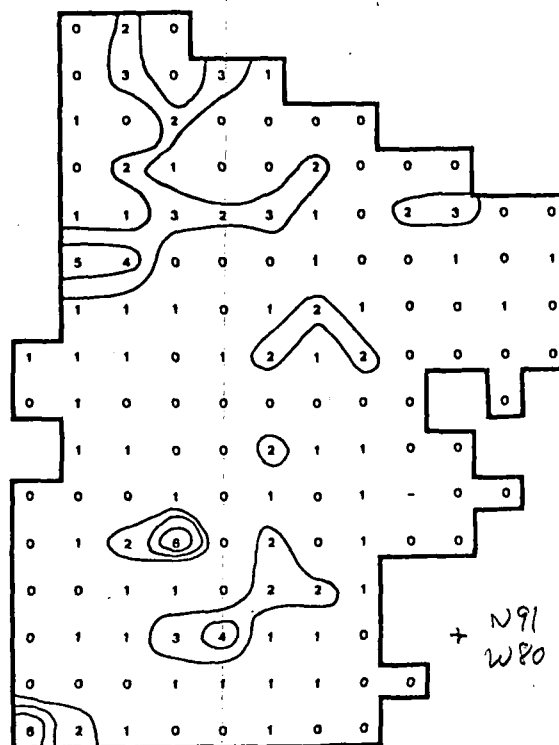
FIRE-CRACKED ROCK



N 121
W 140 +

0 0

gross
Isobar Interval =
2 Artifacts



N 91
W 80 +

0



Numbers Represent Artifacts per STP

Fig 7

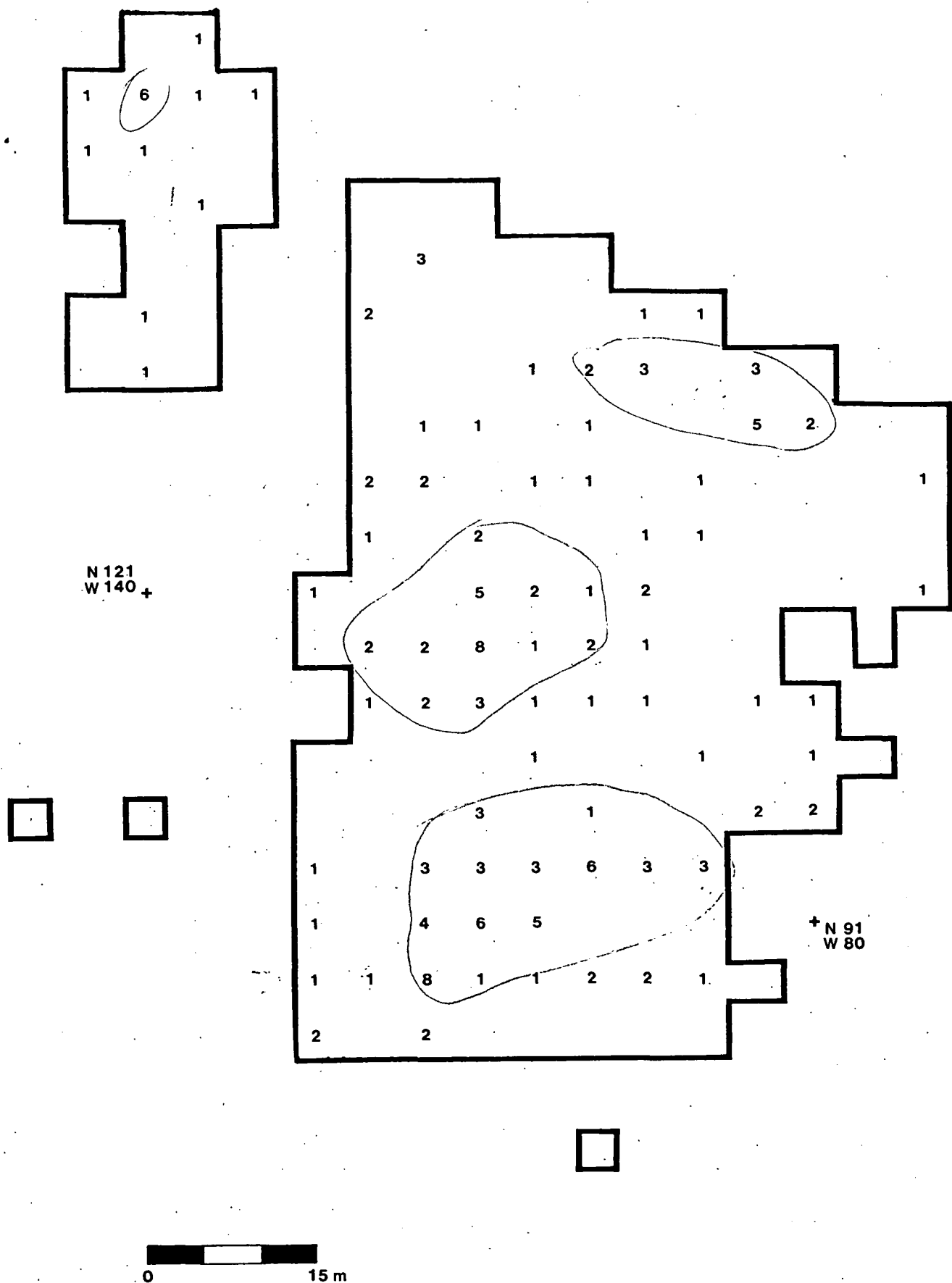


Figure 8. Distribution of Total Ceramics
Total ceramics

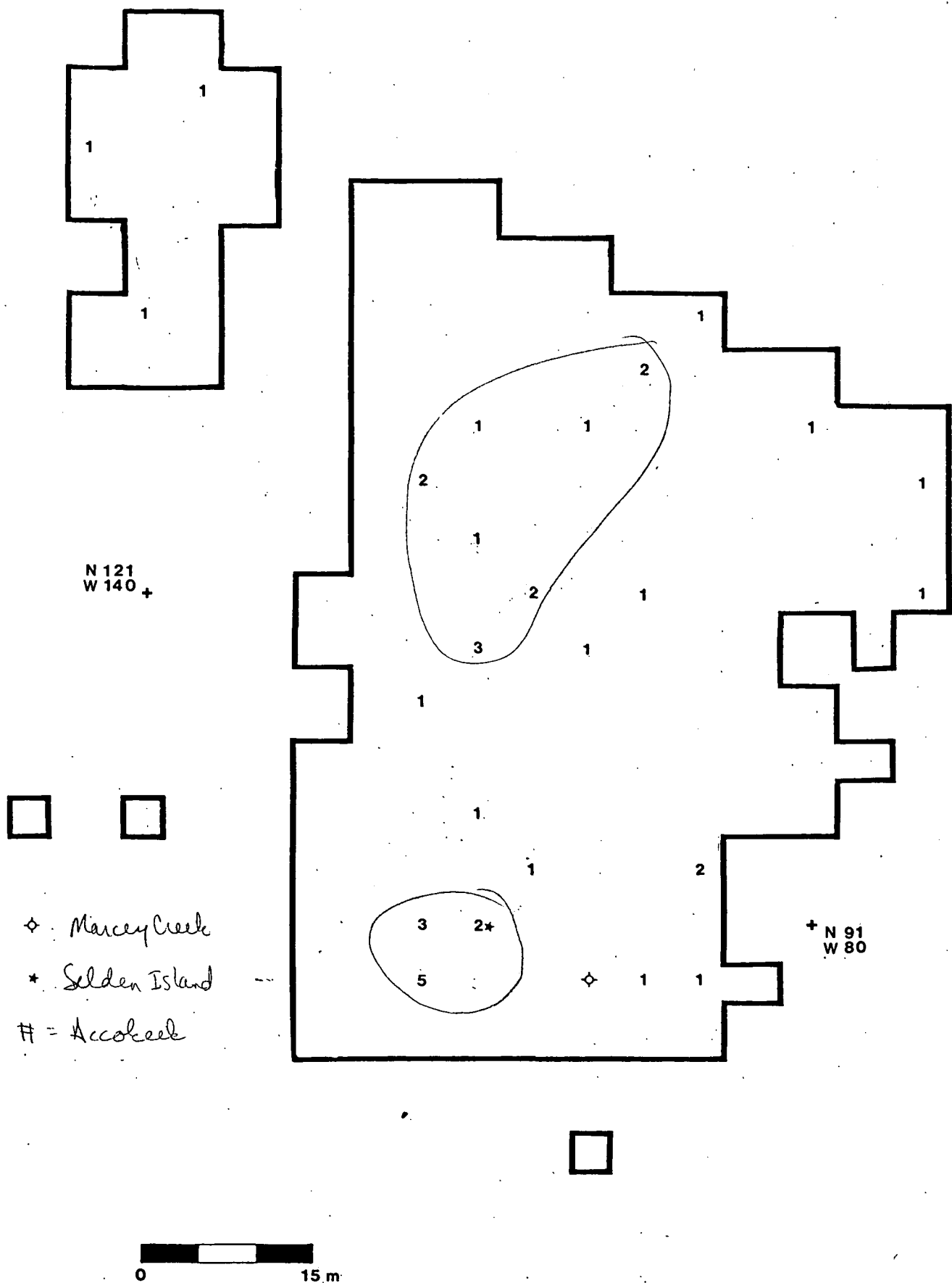


Fig 29. Distribution of Early Woodland Ceramics

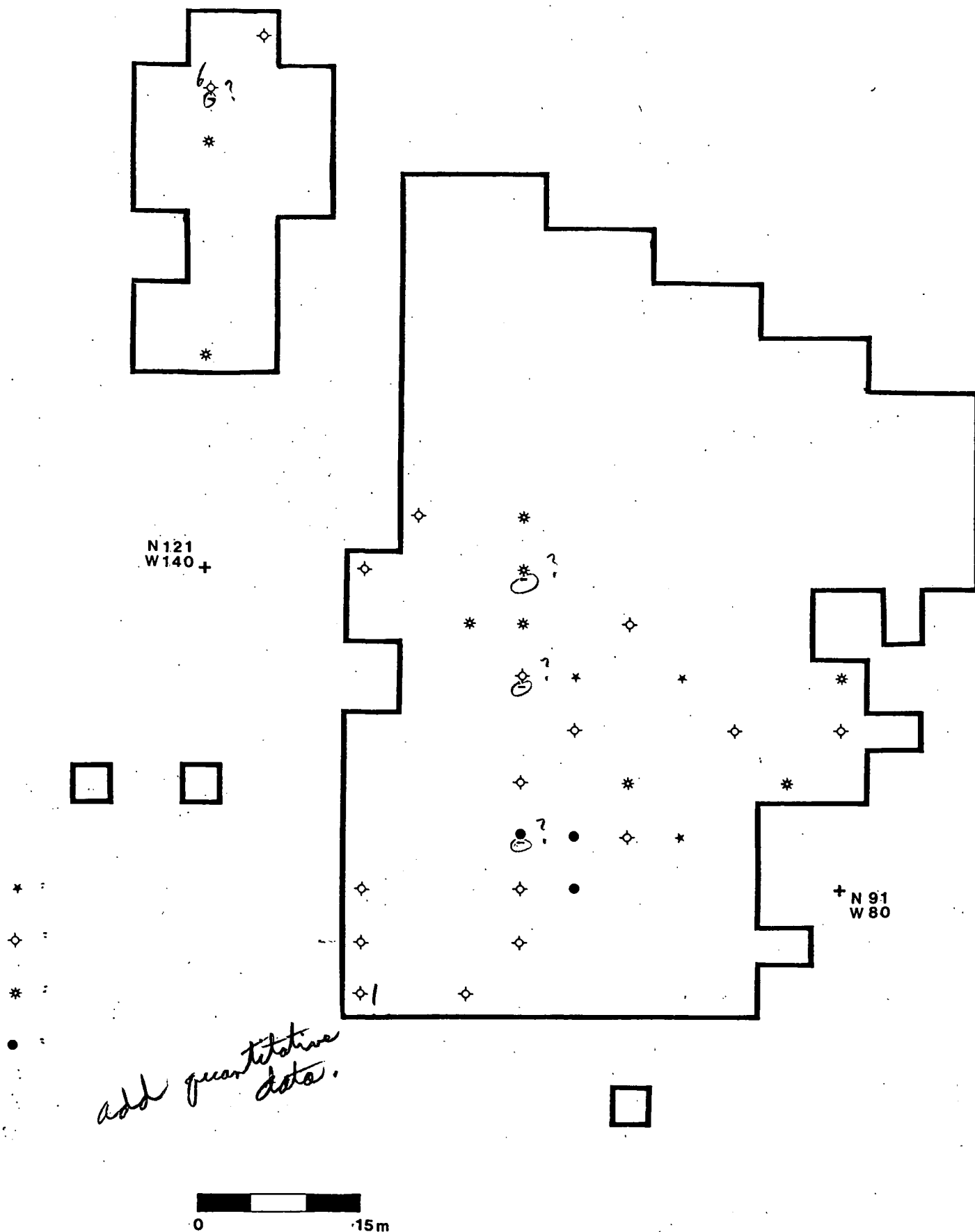


Figure 12. Distribution of Late Woodland Ceramics

TOTAL CERAMICS

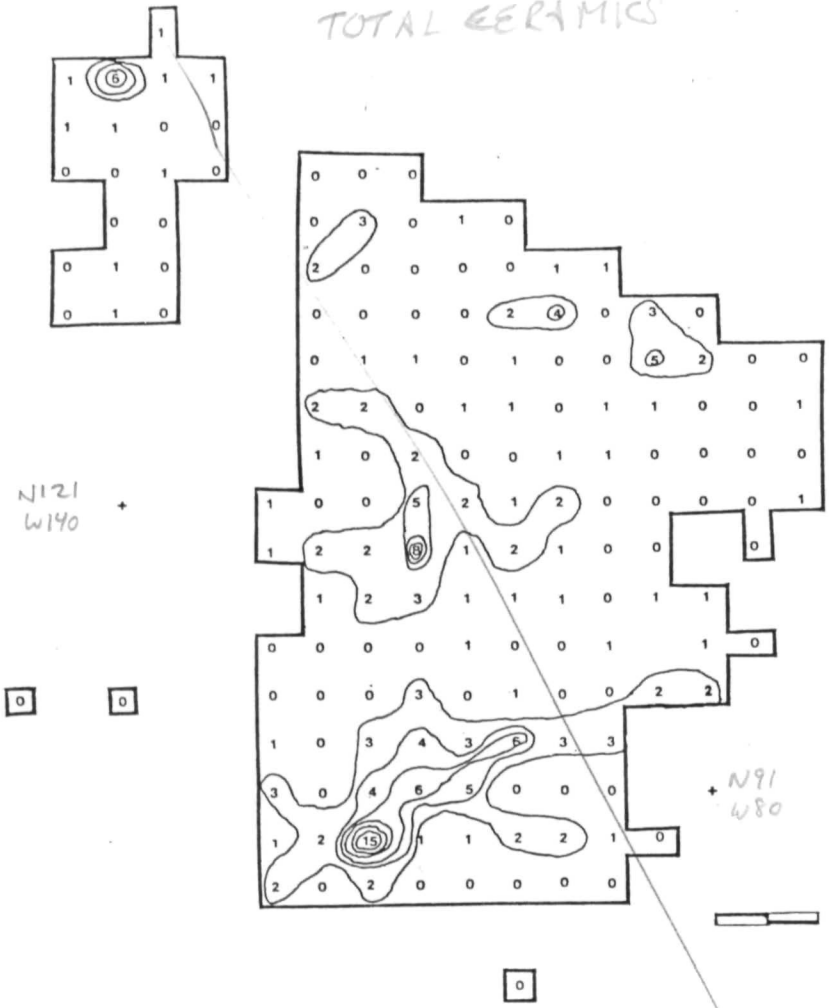
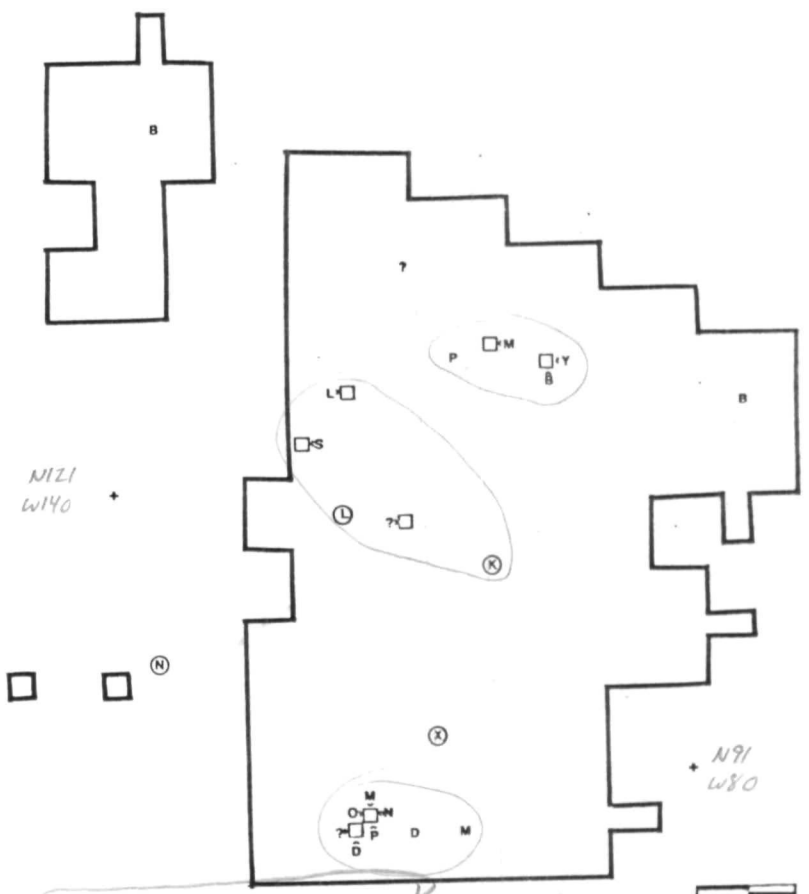


Fig 8



- 1 O = Ossint Fish Creek
- 2 N = Noranahall
- 2 D = Dry Brook
- 1 X = Brewster Face Temple
- 1 K = Lehigh River
- 1 S = Savannah River
- 2 L = Leavenworth
- 3 B = Base Island
- 3 M = Madison
- 1 Y = Brewster Face Temple
- 2 P = Piscataway
- 1 Q = Quaker

Fig 1B

Put site in some order, alpha, or chronol.

STRATIGRAPHY

✓ The soil at the Kettering site is mapped as ~~Bibb silt loam~~ in the Prince Georges County Soil survey as Bib^b silt loam, a poorly-drained soil where "in a few areas the surface layer contains medium-sized sand and feels gritty" (Kirby et al. 1967:19). Bibb silt loam occurs in floodplains and is wet for long periods. ↵

↵ The parent material of the soil is primarily well-sorted fine and medium sand, with minor amounts of gravelly sand, sandy gravel, and silty sand (Kondolf, Appendix I), most likely fluvially deposited.

A-B (The soil profiles encountered in the shovel test pits showed the main body of the site underlain by either a strong brown sandy clay loam or a yellowish brown sandy clay loam, interspersed with pockets of strong brown or yellowish brown sandy loam and gravel, primarily on the north and south edges of the site.

↵ Kondolf's analysis of the soils identified an Ap horizon, a cambic B horizon, and an argillic B horizon. Based on the development of the argillic horizon, Kondolf estimates an age for the soils of at least 2000 years, and more likely 10,000 B.P. ± 4000 (see Appendix I).

The A horizon has pronounced variation in thickness due to erosion of the surface by sheet wash, trapping of sediment by tree roots, and disturbance by plowing and by heavy equipment. In addition, the edges of the site ^{are} ~~on the~~ south, east, and west ~~have been~~ eroded. ✓

Stratigraphy of the Meter Squares

This seems out of place, but don't know where it should go. In the excavation of the meter squares ~~no~~ cultural features were encountered ~~at the site~~. A general summary of the stratigraphy of the squares is presented here, with exceptions noted. ↵

✓ The topsoil layer ^{is} ~~was~~ a humus consisting of a dark brown silt loam ~~from~~ 3-14 cm thick. Modern material ^{is} ~~was~~ abundant, primarily glass and pop tops. This layer ~~was~~ present in all units except Square 7 where there was no humus development. ✓

2 & 3 ?
in #3

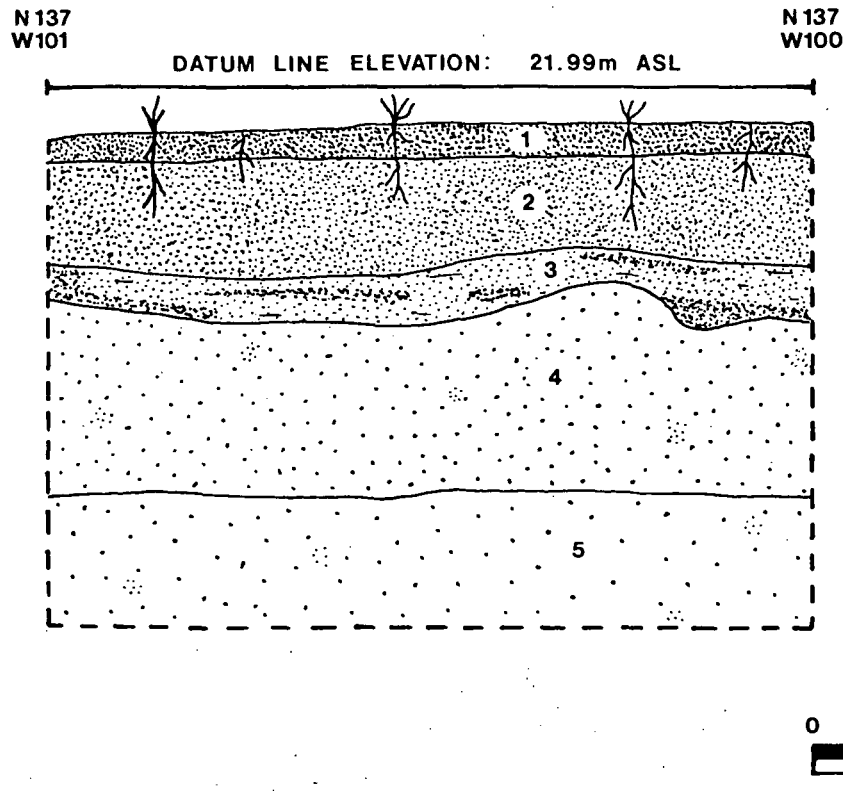
Underneath the humus ^{is} ~~was~~ a mixed A horizon, with a plowzone present in at least two squares. Wash layers and apparent flood disturbance is evident in all the squares. Only one square showed a plowscar (~~Square~~ #7), and only one other (#3) showed a definite plowzone. The profile of the latter square is illustrated in Figure 12. There were 10 different Munsell colors recorded for the mixed wash/plowzone layer; all of the squares showed mottling of at least two colors. Texturally, the soils were a silt loam or a sandy silt loam; in some squares the layer had silt loam at the top which graded into sandy silt loam at the bottom of the layer. The A horizon varied in thickness from 5 to 21 cm, with an average thickness of 10.5 cm. Where the plowzone existed it averaged 14 cm. In all of these layers, modern material was present in the form of glass, coal, plastic, and other 20th-century debris. ✓

Under the mixed wash and plowzone remnant layer is a strong brown sandy loam or sandy silt loam layer which varied from 17 cm to 35 cm in thickness, averaging 25 cm. Artifacts were retrieved from throughout this layer although they were most heavily concentrated near the top. With the exception of square #3, no modern material came from this layer (see Table 1).

✓ Test squares were excavated until a sterile level was reached. In six of the squares a B horizon was encountered: in four of them an argillic horizon, and in two a sand and pebble horizon. In the remaining five squares, the A₂ horizon continued and gradually became sterile of artifacts. The demarcation between the "upper" and "lower" A₂ was only a slight leaching. Table 1 depicts the gradual decline in artifact concentrations down through these profiles. The termination depth of the squares varied from 40 cm to 83 cm, with an average depth of 58 cm.

SQUARE 3

NORTH WALL



1. Dark brown (7.5 YR 3/2) silty loam. Humus.
2. Dark yellowish brown (10 YR 3/4) silty loam, mottled with 10% strong brown (7.5 YR 4/6) silty loam. Plowzone.
3. 60% dark brown (7.5 YR 3/4) sandy silt loam, mottled with bands of 30% dark brown (10 YR 3/3) sandy silt loam and 10% strong brown (7.5 YR 4/6), with streaks of iron oxide throughout. Wash layer? ?
4. Strong brown (7.5 YR 4/6) sandy silt loam, mottled with small patches of yellowish red (5 YR 5/6) sandy silt loam. A2 Horizon.
5. Strong brown (7.5 YR 5/6) sandy silt loam, mottled with small patches of yellowish brown (10 YR 5/8) sandy silt loam. A2-B? Horizon.

Fig 14

Should this be a separate section following the intro. describe, and title intricate analysis.

Stratigraphic Integrity

with no evidence of modern disturbance and clarify

Table 1 lists the diagnostics recovered by level and by natural soil layer. Layers containing diagnostic artifacts (not affected by modern disturbance) are starred. *The provenience of artifacts from undisturbed contexts is summarized in Table 2.* Since the top layers of the A₂ horizon often contained some material from the interface between the plowzone/wash and the A₂, *the* the diagnostics for which exact provenience *was* were taken and which were definitely from below the disturbed soils are listed in Table 2. *diagnostics near the top of the A₂ were undetected, disturbed, or possibly indicated.* In square 11, there is "reverse stratigraphy", that is, there is a mixture of Terminal Archaic, Late and Early Woodland material in Level 2, a Normanskill point in Level 3, and an Accokeek sherd in Level 4. This square is in the southern end of the site near the stream confluence, *where there was* and it showed quite a bit of disturbance due to flooding and erosion.

In all of the other squares there is a strong suggestion of an undisturbed Accokeek component in the A₂ horizon, beneath the disturbed soil, as all but one had Accokeek coarseware *or other?* or friable sand-tempered *sherds* ceramics in the layer immediately below the plowzone/wash layer. When using only provenienced sherds and artifacts well below the interface (Table 2), there are 29 Accokeek and other early Woodland *sherds* ceramics in this layer (excluding square 11) and no other diagnostics. Given the presence of Early, Middle, and Late Woodland diagnostics in the plowzone, the presence of exclusively Early Woodland artifacts in the undisturbed sub-plowzone layer strongly suggests that this is a floodplain stratified site in which the soil has accumulated at least 20-30 cm in the last 2000 years by deposition of silt. Subsequent modern disturbance, primarily plowing and flooding events, has mixed some of the Early, Middle, and Late Woodland material in the top 15-25 cm, while preserving a portion of the Early Woodland cultural material immediately below it.

The only other temporally diagnostic artifact in good context was a Savannah River Stemmed point (Figure 16, j) from beneath the Accokeek level (level 4 in Square #7, 26.5 cm - 36.5 cm below surface, near the bottom of the level). This suggests that a Late Archaic/Terminal Archaic occupation remains may also be segregated stratigraphically. Although there is not enough evidence to draw any conclusion based on the current testing.

TABLE 1, CONT.

Level	Depth below datum (cm)	Flakes (No.)	Ceramics (No.)	FCR (No.)	Modern Material	Soil Description	Diagnostics
#9) N115W109							
1	5-8	6	5	3	*	humus	1 coarseware
2	16-18	27	20	1	*	wash/pz?	1 Accokeek, 4 Group 1
3	27	13	13	2		A2	5 Accokeek, 2 coarseware
4	37	17	11	2		"	3 Accokeek, 1 coarseware
5	47	4	1	-		A2-B	1 sand-tempered sherdlet
6 (1/4)	57	-	-	-		B	
#10) N115W105							
1	7-9	3	4	4	*	humus	1 Accokeek, 1 coarseware
2	15-19	8	5	1		plowzone	1 Mockley, 1 Potomac Creek
3	25	2	3	-		A2	1 coarseware, 1 sand-temp
4	35	4	-	2		"	tempered sherdlet
5	45	-	-	-		"	
6 (1/4)	55	-	-	-		"	
#11) N87W115							
1	4-6	2	18	-		humus	mica-tempered Accokeek vessel fragments
2	15	40	45	19	*	A2	1 Accokeek, 5 coarseware, mica-tempered sherds
3	25	41	1	10		"	1 Townsend, 1 Potomac Creek, 2 Moyaone
4	35	29	1	3		"	1 coarseware
5	45	6	1	2		"	1 mica-tempered Accokeek
6 (1/4)	57	-	-	-		A2-B?	1 coarseware
#11a) N86W115							
1a (1/2)	3-4	-	-	-	*	humus	
1b (1/2)	6.5	7	2	4	*	"	1 coarseware
2 (1/2)	19	17	9	14		A2	3 coarseware, 2 mica-tempered Accokeek
3 (1/2)	29	14	-	2		"	
#11b) N87W116							
1 (1/2)	5-7	2	2	-	*	humus	1 Potomac Creek
2 (1/2)	15	24	3	3		A2	1 mica-tempered Accokeek, 1 Townsend, 1 Potomac Creek
3 (1/2)	25	40	2	2		"	
4 (1/2)	35	12	1	4		"	1 mica-tempered Accokeek
#11c) N86W116							
1 (1/4)	11	4	-	1	*	humus	
2 (1/4)	21	15	3	6		A2	1 Accokeek, 2 coarseware
3 (1/4)	30	16	-	4		"	
4 (1/4)	40	16	-	-		"	

Accokeek component layer

Diagnostic Points

3 Group 1

1 Mockley, 1 Potomac Creek
1 coarseware, 1 sand-tempered sherdlet, 1 quartz-t

mica-tempered Accokeek vessel fragments
1 Accokeek, 5 coarseware, mica-tempered sherds
1 Townsend, 1 Potomac Creek, 2 Moyaone
1 coarseware
1 mica-tempered Accokeek
1 coarseware

1 coarseware
3 coarseware, 2 mica-tempered Accokeek

1 Potomac Creek
1 mica-tempered Accokeek, 1 Townsend, 1 Potomac Creek
1 mica-tempered Accokeek

1 Madison
1 Orient Fiahtail
1 Normanskill

1 Piscataway

TABLE 1, CONT.

Level	Depth below datum (cm)	Flakes (No.)	Ceramics (No.)	FCR (No.)	Modern Material	<i>soil</i> Description	Diagnostic <i>Ceramics</i>	Diagnostic Points
#5) N132W116								
1	6.5-9	16	8	8	*	humus	1 Townsend, 2 Potomac	Creek
2	18.5-21	51	21	15	*	plowzone?	3 coarseware, 2 Group 1,	1 triangular point
★★ 3	30	65	13	16		A2	1 Accokeek, 2 coarseware,	2 Group 1
4	40	39	-	3		"	1 Accokeek, 1 coarseware,	1 Group 1
5	50	14	-	1		"	2 Accokeek, 3 coarseware,	
6	60	5	-	1		"→ B	4 Group 1, 3 Twonsend,	
7 (1/4)	65	-	-	-		B	1 Ptoomac Creek	
#6) N130W75								
1	8-10	3	2	-	*	humus	1 coarseware	
2	20	16	-	6		plowzone?		
★★ 3	30	40	1	5		A2/wash?	1 coarseware	
4	40	31	-	2		"		
#7) N126.5W120.5								
1	12.5-14	29	8	7	*	plowzone	1 coarseware, 1 Group 1,	2 Townsend
2	17-18	5	5	3		pz/top of wash	1 Accokeek, 1 coarseware	
★★ 3	26.5	14	2	14		A2 + root mold	1 Accokeek	
4	36.5	11	-	1		A2		
5	41.5	6	-	-		"		
6	46.5	1	-	-		B"		1 Savannah River Stemmed
						B		
#8) N118W110								
1	9-12	12	6	2		plowzone	1 Accokeek, 3 coarseware,	1 Group 1, 1 Potomac Creek
2	22	18	14	-		pz/wash	2 Group 1, 3 Townsend	
★★ 3	32	10	5	4		A2	3 Accokeek, 1 coarseware,	1 Group 1
★★ 4	42	8	3	-		"	2 Accokeek, 1 Group 1	
5	47	1	-	1		"		
6	57	-	-	-		"		
						A2→B		

ARTIFACT ANALYSIS

no so, since prop 1
in both Popes Cr 2
Accokeek.

Ceramics

✓
✓
The ceramic^S recovered during the Phase II testing are summarized in Table 3, and representative sherds are illustrated in Figure 15. Attributes are presented in Appendix II as part of the analysis by Katherine Dinnel. All of the ceramics were ~~classified by~~^{in ? related to} types defined in the literature except for ~~one group~~^{those} termed "Group 1". In addition, the Accokeek ware was divided into three varieties. These ceramics are described briefly below. *here.*

Group 1 consists of 40 body sherds tempered with medium to ^O coarse sand with occasional crushed quartz fragments. They have a coarse, friable paste with a sandy to gritty texture. The surfaces are eroded. The paste and thickness of these sherds suggest relationship to Popes Creek or to Accokeek. These sherds are assigned to the Early Woodland, ~~for analysis; more detailed description is in Appendix II.~~

The three varieties of Accokeek are: a) Accokeek Cord-Marked, b) Coarseware, and c) "Mica-Tempered" Accokeek Cord-Marked. The first group is "classic" Accokeek as defined by Stephenson and Ferguson (1963). Variety B, ~~The "Coarseware"~~^{and has} is tempered with large (up to 0.5 cm) crushed quartz particles, with a very slightly sandy paste. This differs from ~~Variety A~~^{Accokeek Cord-Marked} primarily in the small quantity of sand in the paste. Another difference is that ~~the~~ Accokeek cord-marked ranges more toward a reddish brown, while the coarseware has a light yellowish brown color. This probably reflects differences in clays used in the paste.

The surface treatment of the coarseware is predominantly with a cord-wrapped paddle. The cord markings are deeply impressed into the clay, and are widely spaced (2-5 mm).

Hand
The ~~final~~ variety, "mica-tempered", is tempered with a fine, heavily micaceous sand. This variety is quite similar to Type D reported by Stephenson and Ferguson (1963) found at Accokeek Creek site.

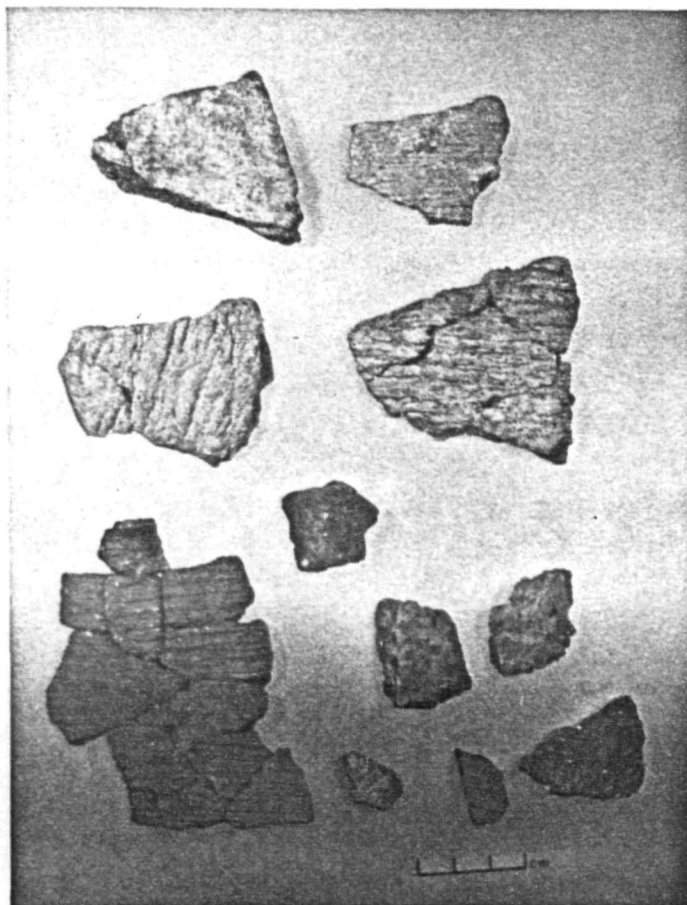


Figure 15. Ceramics.

TABLE 2

TEMPORALLY DIAGNOSTIC ARTIFACTS BELOW MODERN DISTURBED SOIL

ancee

Table 1 says datums

artifacts

all this is in title

Square #	Level	Depth Below Surface	Diagnostics Below Modern Disturbed Soil
1	4	27-37cm	*1 Accokeek
2	3	15-25	1 coarseware
3			
4	4	24-34	2 sand-tempered sherdlets
5	3	21-30	*1 coarseware, 1 Accokeek, 2 Group 1
	4	30-40	2 Accokeek, 3 coarseware, 1 Group 1
6	3	20-30	1 coarseware
7	3	18-26.5	*1 Accokeek
	4	26.5-36.5	1 Savannah River point
8	3	22-32	3 Accokeek, 1 coarseware, 1 Group 1
	4	32-42	2 Accokeek, 1 Group 1
9	3	18-27	5 Accokeek, 2 coarseware, 3 Group 1
	4	27-37	3 Accokeek, 1 coarseware
	5	37-47	1 sand-tempered sherdlet
10	3	19-25	1 coarseware, 1 sand-tempered and 1 quartz-tempered sherdlet
11	3	15-25	1 coarseware
	4	25-35	1 Accokeek
	5	35-45	1 coarseware
11a	2	6.5-19	1 Accokeek, (mica-tempered), 3 coarseware
11b	2	7-15	① Madison point, ① Orient Fishtail, 1 Townsend sherd, 1 Potomac Creek sherd, 1 Accokeek (mica-tempered) vessel portion
	3	15-25	① Normanskill point
	4	25-35	1 Accokeek (mica-tempered)
11c	2	5.5-15.5	1 Accokeek (mica-tempered), 2 coarseware

* artifacts within 2 cm of top of level

TABLE 3

CERAMICS FROM PHASE II TESTING

	Shovel Test Pits	Meter Squares	Total
Marcey Creek	1	0	1
Selden Island	1	0	1
Accokeek			
Variety A	20	24	44
Variety B	13	41	54
Variety C	5	23	28**
Group 1	12	28	40
Mockley	10	3	13
Townsend	22	15	37
Potomac Creek	14	11	25
Moyaone	3	3	6
Unknown	22	22	44
Sherdlets	40	69	109
TOTAL:	163	239	402

** Mending ^{ed} sherds counted as one sherd.

Lithics

Material

Quartz is by far the dominant lithic material in the assemblage, followed by quartzite, rhyolite, chert (including jasper), silicified sandstone, sandstone, siltstone, slate (?), and ironstone. ←

The quartz, quartzite, and chert are locally available in cobble form; the presence of chunks, shatter, and cores is evidence for on-site tool making. Silicified sandstone, sandstone, and siltstone were likewise locally available, also in cobble and pebble form. Rhyolite does not occur naturally in the immediate vicinity; the nearest source is in the western Piedmont some 140 km (88 miles) distant. Ironstone was probably obtained from outcrops of the Potomac Group and Magothy Formation (Ward and Doms 1984, Vokes and Edwards 1974) although the actual source is uncertain.
particular unknown

show general tool and debitage categories
Table 4 ~~indicates the lithics~~ recovered from various aspects of the testing, and Table 5 shows ~~the breakdown of the lithic categories~~ by material.
general tool & debitage

The abundance of ~~the~~ local material should be reflected not only in the largest quantities, but also in low tool:debitage ratios. However, the lowest tool:debitage ratio, 1:53, is for rhyolite. This is difficult to explain as one would expect a higher ratio of tools to debitage from non-local material. One possible explanation is a lower level of tool discard from this group than from quartz and quartzite. Quartz and quartzite were probably used for a wide range of expedient tools which were discarded at the site. Chert (1:16) and jasper (1:3) have the highest ratios, possibly reflecting local scarcity of this high-grade material. Another possible explanation ^{for these high ratios} is that evidence of retouch and utilization are more easily identified on the fine crypto-crystalline materials.

Table 5 says 1:32

Not really difficult when you consider cultural factors. Jasper involved in trade & production of rhy. art.?

Points

Table 6 lists the points recovered, their provenience, and temporal affiliation. Most of the specimens are illustrated in Figure 14¹⁶. The points cover a range from Late Archaic types to Late Woodland, with Bare Island and Madison types being the most numerous individual specimens. ✓

In addition to those listed in Table 6, there were 10 projectile points and point fragments which could not be identified. Six of these are illustrated in Figure 15.17. ✓

Other Tools

Fifteen bifaces were recovered in the testing: 11 of quartz, 3 quartzite, and 1 rhyolite. Some of these are illustrated in Figure 15.17. The likely functions of these tools were: knives (5), chopper/knife (1), scraper (3), and unknown (6). ✓

Other tools consisted of retouched and utilized flakes, which represent a range of uses. The modified flakes were made of quartz (n=26), quartzite (n=4), chert (n=4), and jasper (n=8). As mentioned earlier, the higher representation of chert and jasper is probably due to the visibility of retouch and utilization scars along the edges; quartz and quartzite are probably underrepresented. The majority of the specimens were retouched on one or more edges. The possible functions are: 2 possible burins/gravers (Figure 17, a,), 7 scrapers, 2 knives/scrapers, 2 chopper/scrapers, 2 knives, and 1 chopper, and unknown (28). The "unknowns" were most likely used as expedient tools for a variety of cutting and scraping activities. ✓

Other Lithics

Other lithics include hammerstones or abraders (6), a fragment of hematite, and 2 chunks of steatite. Also, there was an unusually high number of whole and cracked quartz pebbles and small quartz chunks in square #2 (N142W115), levels 3-5. In levels 3 there were 61 whole quartz pebbles, 111 cracked pebbles, and 23 quartz chunks. In level 4 there were 91 whole quartz ✓

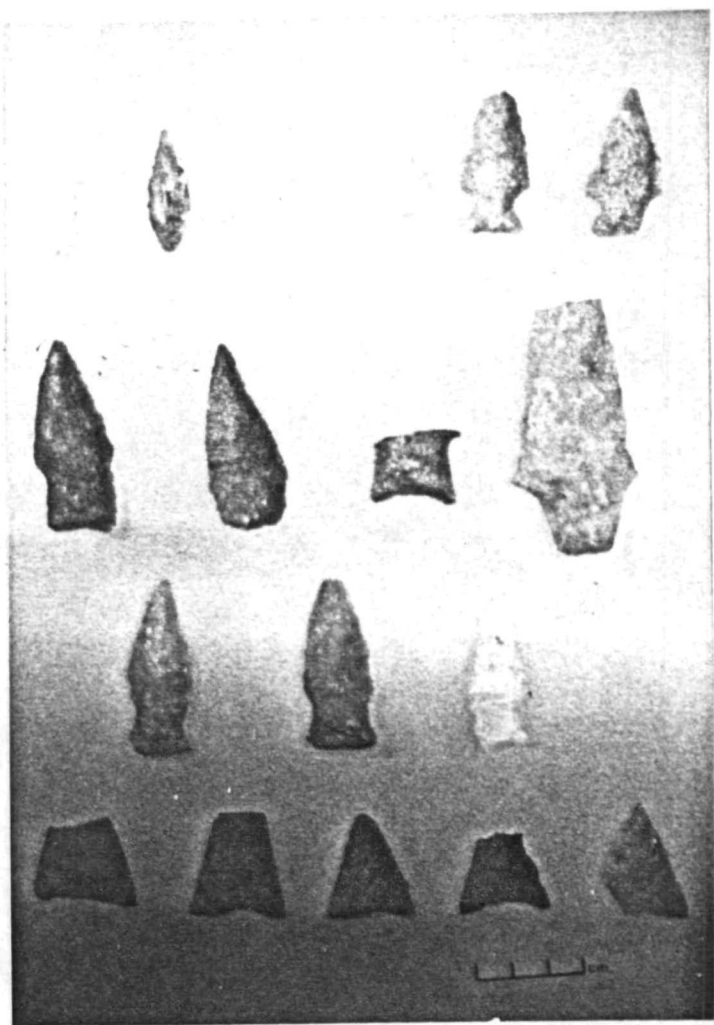


Fig 16. Projectile Points



Fig 17 Lithics

✓ pebbles, 66 cracked quartz pebbles and 20 quartz chunks. Level 5 had 35 whole pebbles and 49 cracked, with 6 quartz chunks. In each level there ^{was} ~~were~~ also a small number (20) of sandstone and chert pebbles. The pebbles were nearly uniform in size and slightly over ~~one~~ half of them had one or two edges battered or they were split in half; they were not fire-cracked. The fracturing quality of the quartz was generally quite poor; the quartz was chunky rather than of flaking quality. The average weight of the whole pebbles is 18 grams, and a histogram of the weights shows a normal distribution with very little deviation. An 18-gram pebble is too small for ideal tool-making. The hypothesis proposed here is that these quartz cobbles were selected for crushing for tempering ~~for~~ ^{the} pottery, as the quartz temper observed in the Accokeek pottery and in the coarseware is crushed angular quartz which would break nicely into chunks but would not be a good material for tool manufacture. If this is the case, then it could be inferred that pottery-making was occurring on the site, expanding the known range of activities that took place in this interior location.

at

TABLE 4

LITHICS FROM PHASE II TESTING

	TOOLS			DEBITAGE			
	Points	Bifaces	(Modified Flakes)	Flakes	Chunks	Shatter	Cores
Grab Surface							
Collection	7	57	56	56	36	76	76
Shovel Test							
Pits	8	6	20	664	21	32	0
Test Squares	14	9	21	1547	393	174	7
TOTALS:	29	15	41	2211	414	206	13

TABLE 5

CHIPPED STONE ASSEMBLAGE BY LITHIC MATERIAL

(Total from surface collection, ^{shovel test pits} STPs, and ^{sc sc} test units)

Lithic Material	TOOLS			DEBITAGE				TOOL: DEBITAGE RATIO
	Points	Bifaces	Modified Flakes	Flakes	Chunks	Shatter	Cores	
quartz	9	11	26	1405	390	179	10	1:43
quartzite	14	3	4	515	3	20	3	1:26
rhyolite	2	1	2	154	3	2	0	1:32 ?
chert	2	0	4	74	18	5	0	1:16
jasper	1	0	8	30	0	0	0	1:3
silicified sandstone	1	0	0	21	0	0	1	1:22
sandstone	0	0	0	6	0	0	0	
siltstone	0	0	0	4	0	0	0	
slate	0	0	0	1	0	0	0	
ironstone	0	0	0	1	0	0	0	
TOTALS:	29	15	44	2211	414	206	14	

TABLE 6

TEMPORALLY DIAGNOSTIC PROJECTILE POINTS FROM PHASE II TESTING

Point Type	Material	Provenience	Illustration	Cultural Affiliation	Date	Reference
Piscataway	quartz	N136 W105, STP	Figure 14, a ← a	Late Archaic	ca. 4000-3000 B.C.	McNett & Gardner 19
Piscataway	rhyolite	N 86 W116, L.1	Figure 14, b ← b	"	"	"
Brewerton Side-Notched	quartz	N135 W 95, L.2	" c	"	ca. 2500-2000 B.C.	Ritchie 1971
Brewerton Eared-Triangular	"	surface, grab	" d	"	"	"
Normanskill	quartzite	surface, grab	" e	"	ca.	"
Normanskill	"	N 87 W116, L3	" f	"	ca.	"
Bare Island/Holmes	"	N161 W135, STP	" g	"	ca. 2000 B.C.	Kinsey 1972
Bare Island/Holmes	"	N131 W 75, STP	" h	"	"	"
Bare Island/Holmes	"	N135 W 95, L2	"	"	"	"
Savannah River Stemmed	"	N126.5 W120.5, L4	" i	Terminal Archaic	ca. 1900 B.C.	Coe 1964
Lehigh Koens-Crispin	"	surface, grab	" j	"	ca. 1700 B.C.	Kinsey 1972
Orient Fishtail	"	N 87 W116, L2	" k	"	ca. 1200	"
Dry Brook Fishtail	"	N 86 W110, STP	" l	"	"	"
Dry Brook Fishtail	← quartz	N 87 W115, L2P	" m	"	"	"
Levanna a	← chert	surface, grab	" n	Late Woodland	ca. A.D. 1000-1600	Ritchie 1971
Levanna	← quartzite	N 86 W105, STP	" o	"	"	"
Madison	"	N 87 W116, L2	" p	"	"	"
Madison	"	?	" q	"	"	"
Madison	"		" r	"	"	"

Other Cultural Material

Twenty bone fragments were recovered in the test excavations; 10 of them burnt. All were small and in deteriorated condition; none were identifiable as to species. The acidity of the soil (pH=4-5) for Bibb silt loam (Kirby et al. 1967) points to a very low likelihood of bone preservation. *The bones may be modern. What is provenience?* ?

SUMMARY OF SITE OCCUPATION

Based on the limited sample obtained through Phase II testing some tentative statements regarding times of site occupation and possible activities can be made. However, comparisons between assemblages from different time periods are limited by sample size and by our knowledge of the relationship between intensity of occupation and discarded artifacts.

There is some indication of Late Archaic occupation as evidenced by projectile points: Piscataway (2), Brewerton Side-Notched and Eared-Triangular (1 each), Normanskill (2), Bare Island (3), Savannah River (1), Orient Fishtail (1), and Dry Brook (2). This coincides quite well with an increase in prehistoric activity through the Patuxent drainage. (Steponaitis 1980:3): "[Late Archaic]...sites seem to be occurring in a broad variety of environmental zones adjacent to the Patuxent, along second and third order streams and adjacent to swamp areas" (Steponaitis 1980:83). ✓

Brewerton points are not as common in Patuxent collections and Steponaitis does not mention Normanskill points in the collections. The Bare Island/Holmes on the other hand, "is the most abundantly represented point in the Patuxent drainage, suggesting a dramatic increase in the use of the study area" (Steponaitis 1980:85).

Savannah River, Orient Fishtail, and Dry Brook projectile points are relatively scarce in the Patuxent. Marcey Creek and Selden Island ceramics occur with moderate and low frequency, respectively. ✓

With the advent of the Accokeek phase a change is noted. "The settlement pattern observed in the Patuxent for the Accokeek phase represents a dramatic shift from the Marcey Creek phase. This shift is characterized by: (1) an increase in the number of components, (2) an increase in the amount of artifactual materials, and (3) the presence of shell-midden sites adjacent to the estuarine zone of the river" (Steponaitis 1980:96). Steponaitis suggests a balanced utilization of interior, riverine, and estuarine resources by perhaps an increasingly sedentary population. *ce*

The ~~lack of these ceramics~~ ^{presence of} Popes Creek ceramics are relatively scarce in the drainage, and the sample from the Kettering site mirrors the pattern for the Patuxent. ~~increase in abundance~~ of Mockley ceramics during the Selby Bay phase is also reflective of overall trends in the Patuxent (Steponaitis 1980). No Selby Bay points/knives were identified from the site, although Mockley ceramics are present.

not so per table 3 *same as Table 3*
Late Woodland components at this site deviate from the drainage pattern in having equal representation of Potomac Creek and Townsend wares. (Townsend wares are more dominant in the drainage.) Although most of the Townsend ceramics were small body sherds, no Townsend Corded-Horizontal was in the collection, hypothesized as a result of interaction between the two groups with "Potomac Creek-derived" decoration on Townsend ware (Griffith 1980:36).

Site Function(s)

where does this idea come from? *in fact is point of this site river mouth is small?*
The site's catchment area (all area within 10 km distance from the site) is primarily well-drained, gently sloping uplands. This places the site on the interface between the well-drained woodlands and the poorly-drained marshes immediately adjacent to the site, putting a wide variety of food resources within reach of the inhabitants. The site appears to have been primarily a short-term hunting and gathering locale, with possibly some longer term occupation or different activities during the Early and Middle Woodland. ~~The scanty Popes Creek pottery is suggestive of an interior camp, as the main base camps for Popes Creek are in the estuarine areas of the Potomac (Handsman and McNett 1974).~~ There is also a possibility that pottery-making was occurring at the site, apparently associated with the Accokeek phase. The

site was periodically reoccupied, probably on a seasonal basis. Unfortunately the paucity of faunal remains limits the available information from this source. *are they clearly associated?*

SITE SIGNIFICANCE

~~The Kettering Park site must be evaluated on its scarcity, integrity, and its archeological research potential.~~

The integrity of the Accokeek component at the site appears to be very good. The upper 20-25 cm of the site have been disturbed by cultivation, use as a park, and recent erosion. However, since the site received accretional flood deposits in prehistoric times, the cultural remains appear to have good stratigraphic integrity. While no features were uncovered in the Phase II testing, the presence of Accokeek material in 9 of 11 control units at ca. 25-35 cm below surface has demonstrated the stability and uniformity of this layer across the site.

The site must also be considered a scarce archeological resource. While a number of Accokeek sites are known from the inland Patuxent River drainage, there has been only one reported excavated component to date, the King site by Thomas Mayr. The majority of known Accokeek sites are represented by mixed assemblages from plowzone contexts. Only one radiocarbon date for an Accokeek component in Maryland is reported in the literature (Wright 1973). Thus, while there are a number of Early Woodland sites in the interior coastal plain, there are few which have demonstrated good integrity.

Given the nature of the archeological remains, the Kettering Park site has high research potential. Its primary value lies in the isolation of an Early Woodland component. Even if features are not located, sampling the Accokeek component would provide a representative collection of artifacts associated with the phase and would allow specific statements concerning activities at the site. For example, there is a concentration of quartz pebbles unsuitable for tool-making which appear to have been crushed for pottery temper; thus it seems that pottery-making may have been an activity at the site. Other parts of the tool kit can be associated with the Accokeek

phase stratigraphically and assessed for their functions and uses. Toward ✓
this end, techniques reported by Loy () and used locally by Flanagan
(1984) to assess organic residues on stone tools could be used on this sample.
Lithic materials could also provide detail on the extent, direction and nature
of trade and exchange systems operating in the Early Woodland relative to
earlier and later periods.

Three varieties of Accokeek ceramics were identified at the site from
Phase II testing. A sampling strategy as mitigation would provide a large
enough sample to formally define these varieties.

If features are determined to be present, the additional research
possibilities include radiocarbon dating and the assessment of floral remains,
which may be well-preserved in the acid, silty soils. However, even without
these materials, the site contains important information on the material
culture of the Early Woodland occupants of the interior coastal plain which
can be addressed through the artifact sample alone.

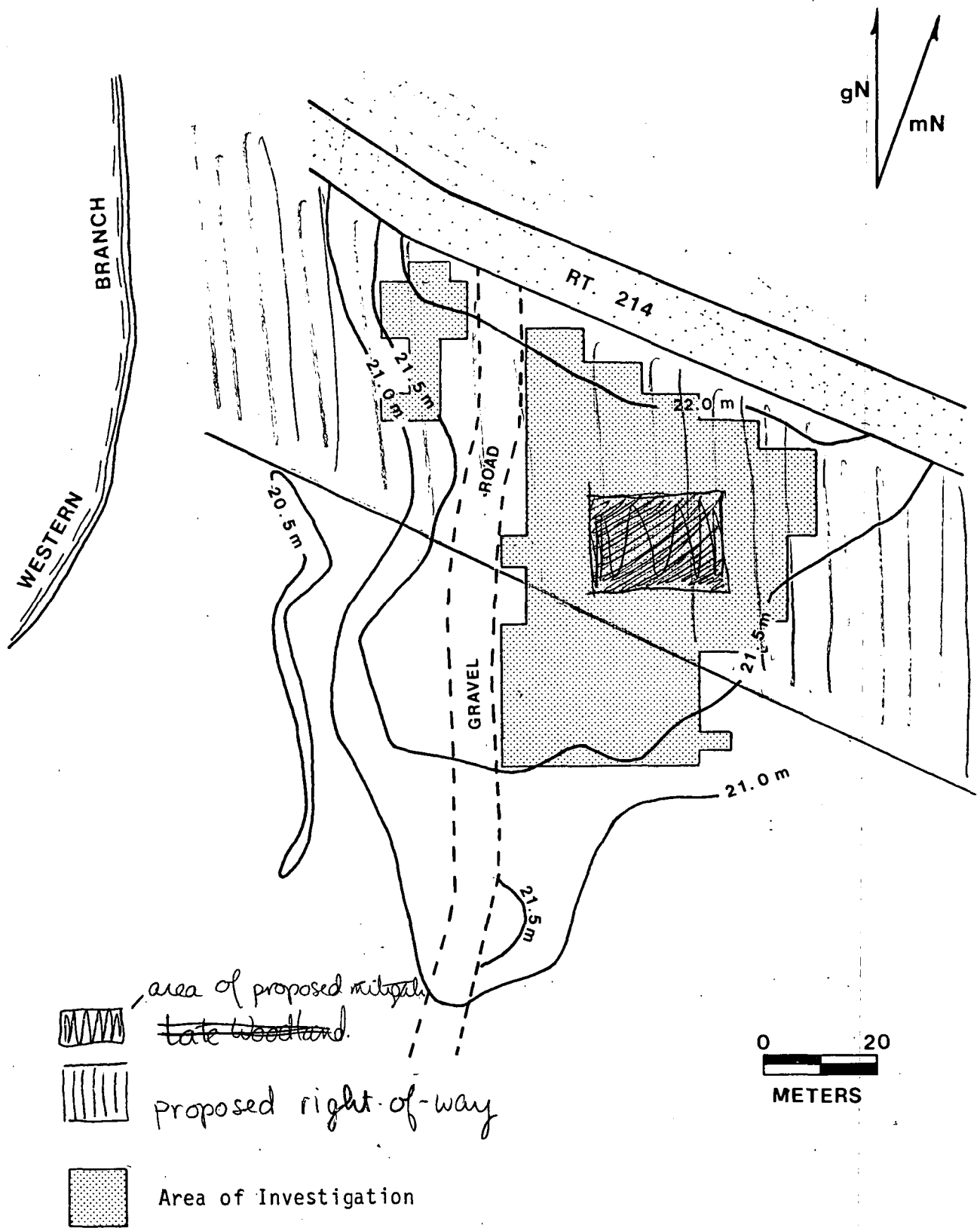
In sum, ^{likely} this site is ~~considered to be~~ eligible to the National Register
of Historic Places because it is a scarce resource and has high research
potential. Avoidance or appropriate mitigation efforts through sampling are
recommended.

Proposed Impact and Recommendations

The proposed dualization of Route 214 would encroach approximately 40
meters into the Kettering Park site (see ^{Figure 16} attached map). Thus the planned
roadway would impact slightly over one-half of the site (approximately
2600m²). The preferred alternative would be avoidance of the site. However,
if avoidance is not feasible a mitigation strategy of intensive sampling is
recommended.

The proposed mitigation would consist primarily of [?] (a) 10% sampling of the
area of concentration of Early Woodland material (see ^{Figure 16} attached map). This
sampling would entail excavating thirteen 2m ^X 2m units in this area. In
addition, two 2m ^X 2m units would be reserved for excavation elsewhere within

(under what
circumstances?)



Contour Interval is 0.50 Meter

All Elevations are ASL

Figure 18

the right-of-way or to open up additional areas for features. The large unit size would combine an effective sample size with increased efficiency in excavation. The plowzone/wash layer would be sifted in one quarter of each 2m x 2m square, then removed from the remaining three quarters without screening. Below the plowzone, the A2 horizon would be troweled by quadrant and artifacts would be provenienced by meter square with exact provenience of diagnostics. Features, if present, would be exposed in plan and excavated, with flotation samples taken. Finally, one of the four squares would be excavated to sterile subsoil.

A cost and time estimate for this proposed mitigation is attached in Appendix IV. ✓

NEW Page

APPENDIX I

PEDOLOGY AND GEOMORPHOLOGY OF THE KETTERING PARK SITE (18PR174)

Prince Georges County, Maryland

G. Mathias Kondolf

Native references are not included here.

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*Should the fig.
in this app. be
re-numbered sequentially
w/ main text?*

SITE DESCRIPTION

The Kettering site is located on a low alluvial terrace, about 60 x 80 m, on the south side of Maryland Rte. 214 between Largo and Kolbes Corner (Figure I-1). The site, at the confluence of the Western and Northeast~~ern~~ Branches of the Patuxent River, is underlain by Quaternary fluvial sands and gravels of the Wicomico Formation (Cooke and Cloos 1951). The surrounding coastal plain uplands are underlain largely by the Tertiary Aquia greensand (a green glauconitic sand) and by less extensive outcrops of the Tertiary Chesapeake group (light grey diatomaceous earth and fine pebble sand) (Cooke and Cloos 1951). Soils developed on the uplands are mapped as Collington fine sandy loams (Kirby et al. 1967). Stream gradients are gentle and relief is subdued. The site was once farmed, reforested, and recently partially cleared to leave an open, park-like stand of trees, primarily beech, of typically 30-50 cm diameter.

PARENT MATERIAL

The parent material upon which soil has formed consists primarily of well-sorted fine and medium sand, with lesser occurrences of gravelly sand, sandy gravel, and silty sand. The deposits are interpreted as fluvial deposits of the Western and Northeast~~ern~~ Branches, and possibly of a small tributary that drained the upland to the north and once joined the Northeast~~ern~~ Branch near the eastern margin of the site. A road now occupies this draw, so it is difficult to reconstruct the paleodrainage to assess the possible contribution of sediment from this stream to the alluvium at the site.

Changes in parent material size are believed to be responsible for the sharp contacts observed in some profiles (from sand to gravel, and from sand to silty sand). However, most soil development has occurred on a massive fine-medium well-sorted sand that extends to depths of 1 m in most profiles. This sand lacks evidence of primary sedimentary structure or textural change.

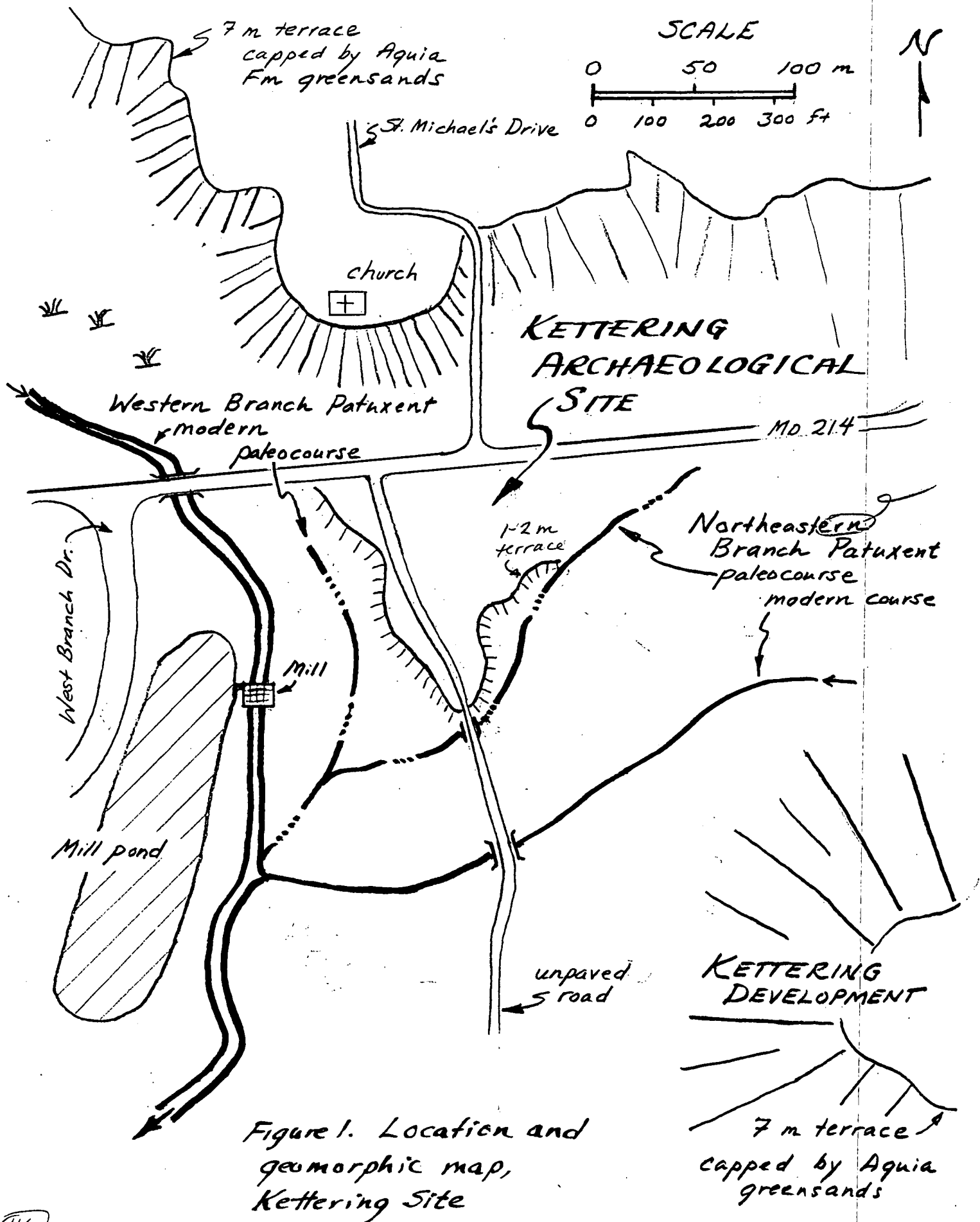


Figure 1. Location and geomorphic map, Kettering Site

Fine sands deposited in the backwaters of major floods could be responsible for a massive primary depositional structure. Conceivably, the sand could have been deposited as one event. Alternately, sequential events could be responsible, with all primary stratification since lost to soil development.

Stratigraphic relations below the sand are complex. Gravels suggest that paleochannels (former channels) crisscrossed the site, but more deep holes would be required to map these former channels. A more recent gravel occurs at a depth of 40 cm in auger hole N80 W100. A fresh-looking fragment of glass was found here at a depth of 70 cm; it was dated as post-1923 on the basis of its lettering (a portion of "reuse of this bottle is prohibited...") and probably post-1950 on the basis of the quality of glass (Silas Hurry, personal communication). This gravel is overlain by 40 cm of thickened A horizon and appears to have been inset into the sloping terrace edge by a recent flood (see Figure I-5). Other gravels underlie the primary sandy unit and thus predate the sand and its pedogenesis.

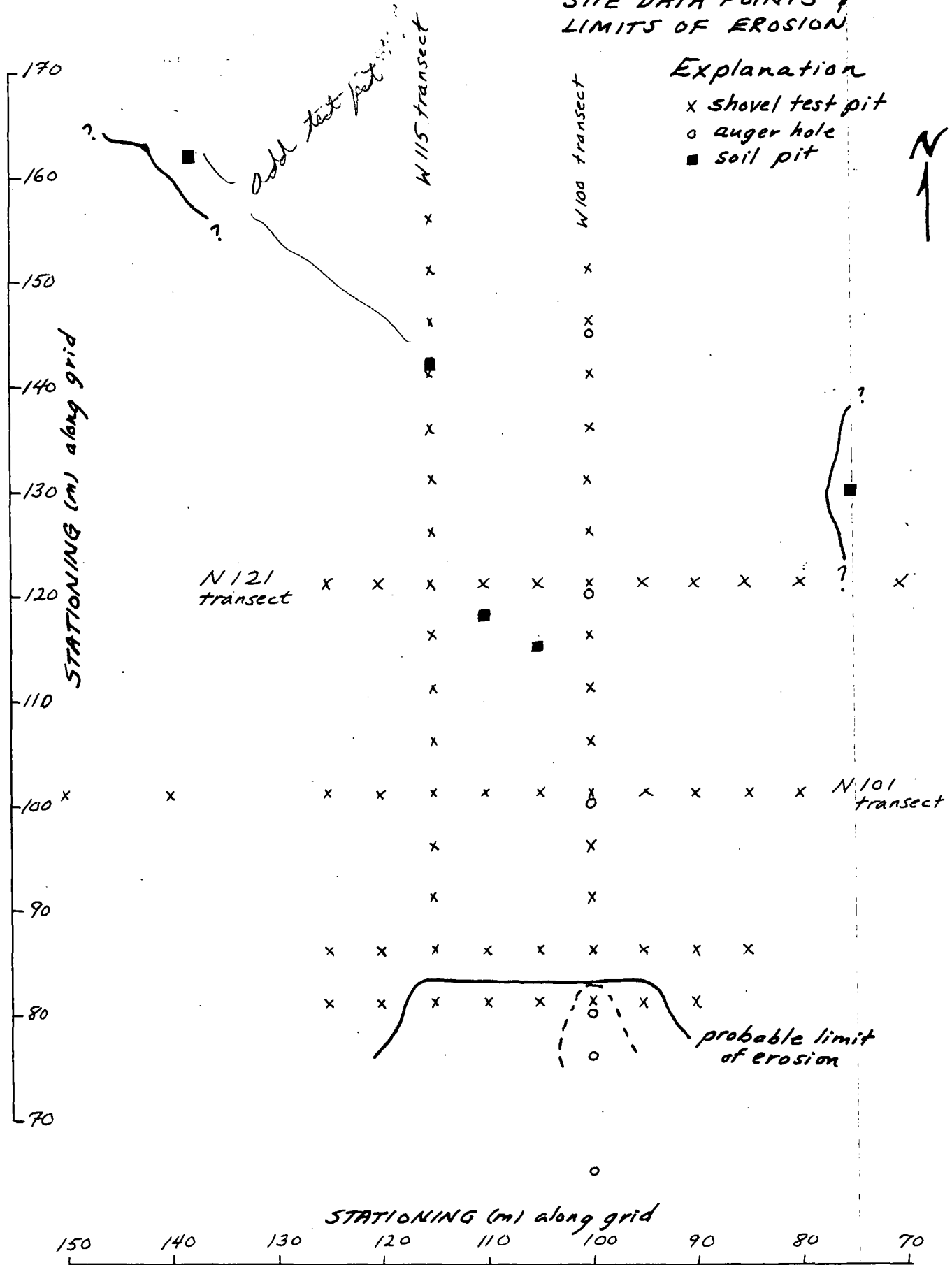
PROCEDURE

To obtain the most usable information most efficiently, existing archeological test units were described and soil profile descriptions logged from shovel test pits (STPs) on a 5m grid were adapted for use in stratigraphic cross sections. One line of auger holes was drilled along the W100 transect. In order to use the auger hole and S.T.P. data, 4 transects were levelled, two N-S (W100 and W115) and two E-W (N101 and N121). Locations of auger holes, STPs and soil pits ^(archeological test units) used in this analysis are shown on Figure I-2. Although STPs are shallow and thus do not yield data on underlying stratigraphy, they are important for determining the lateral extent of soil units.

Soils were described in the field for color, texture, and consistency. Given the scope of the project, no size analyses or other laboratory tests were performed.

Textural descriptions recorded by Kavanagh were adjusted to reflect the higher sand fractions observed in nearby holes; these adjusted textures are used in Figures I-5 and I-8).

FIGURE 2 - KETTERING
SITE DATA POINTS &
LIMITS OF EROSION



PEDOGENIC DEVELOPMENT

The soil at the site is mapped as Bibb Silt-loam in the Prince Georges County Soil Survey (Figure I-3; Kirby et al. 1967). The description of this unit includes mention that, "In a few areas the surface layer contains medium sized sand and feels gritty" (Kirby et al. 1967:19). The Kettering Park site is such an area. The soils here are loamy sands and sandy loams. In most pits a cambic B and argillic B are developed. Parent material usually changes at the base of the B horizon.

Colors are quite red in the argillic B horizons, although color can vary dramatically from pit to pit. For example, pit N115 W105 is only a few meters from pit N118 W110, yet it is strikingly redder. Occasional thin clay skins are visible in the argillic B. Structure is generally weak to moderate in A, cambic B and argillic B horizons. Sands and gravels that underly or overly the soil may be massive and structureless.

A representative profile (N118 W110) is shown in Figure I-4. Recall that there is substantial variation from hole to hole, especially below about 80 cm depth.

Mottles are common below 80 cm depth, indicating that this site is poorly drained. Iron oxide cemented concretions (usually 80-100 cm) reflect the abundance of iron available from the weathering of the glauconite derived from the greensands of the uplands deposited at the site.

AGE AND STABILITY OF SOIL

Aside from the recently inset gravel (N80 W100), and the possibly recent deposition of sand over a now buried B horizon at N130 W75, the site appears to have been stable long enough that an argillic B horizon could develop. How long is that? To answer this question, we can refer to studies by other workers who have used independent means (such as C-14 isotopes) to date soils of varying stages of development. We must bear in mind, however, the rates of

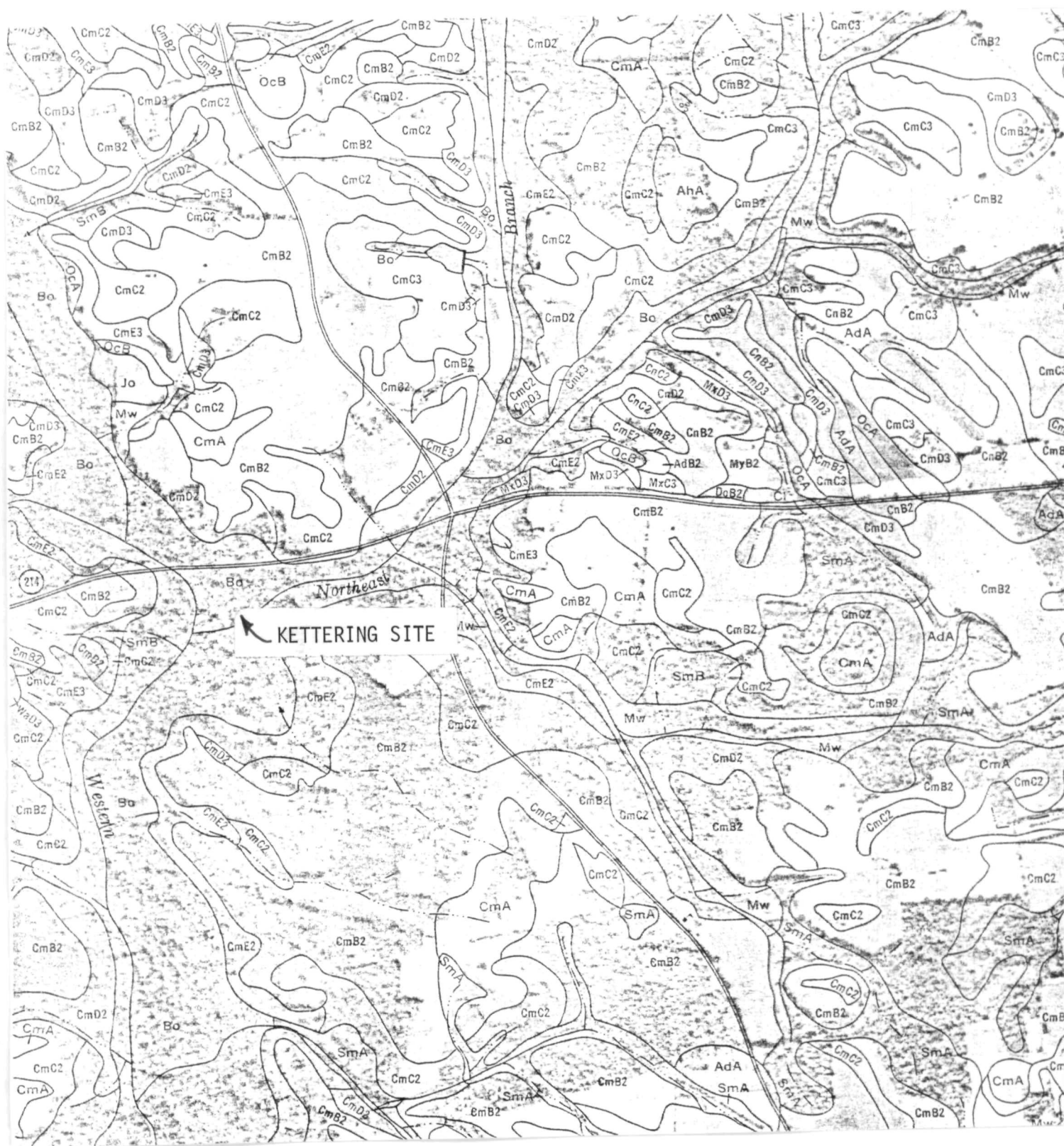


Figure 3. Soil survey for Kettering site (Kirby et al.)

KETTERING SITE
Pit N118 W110
described 5-11-83

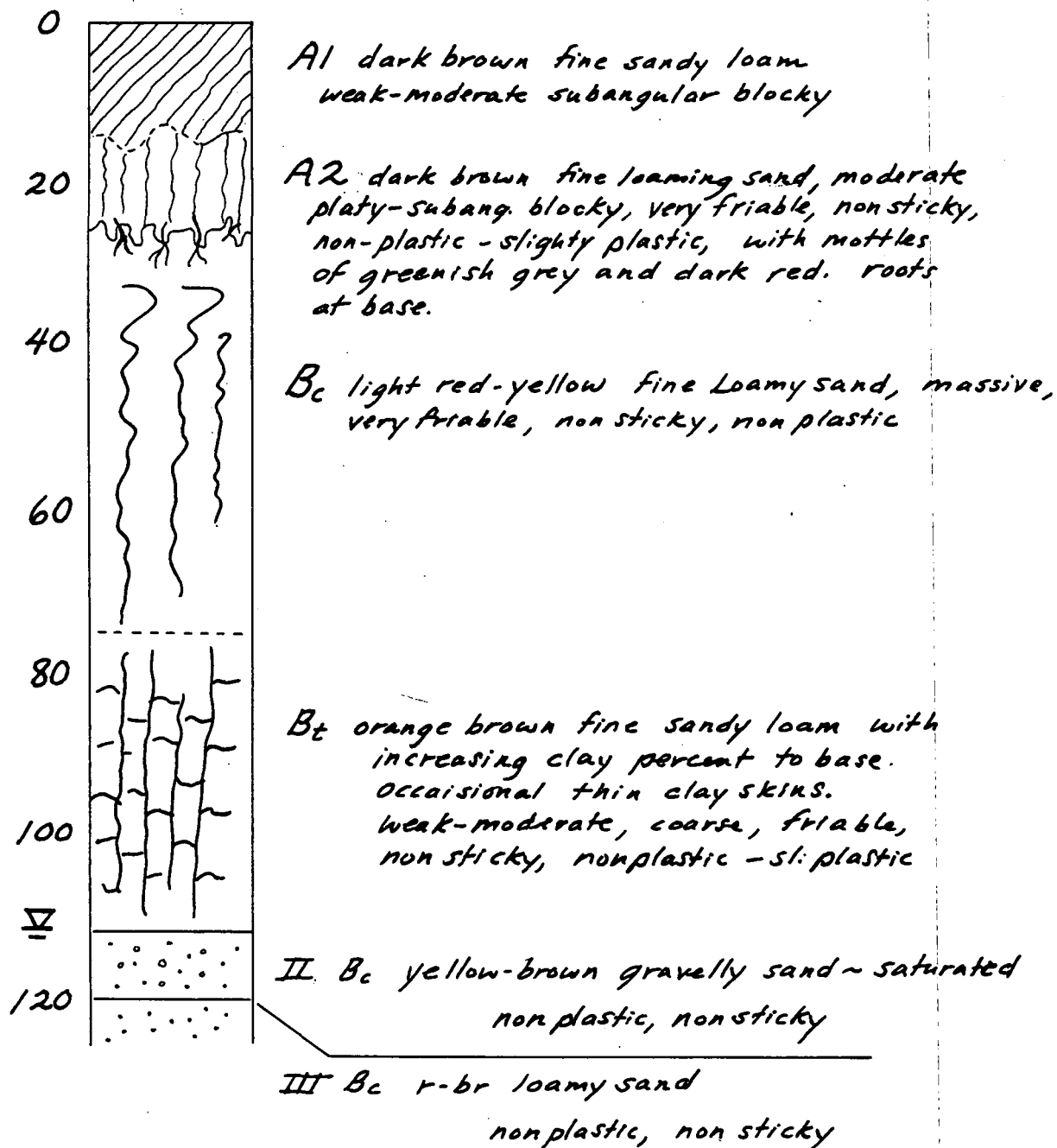
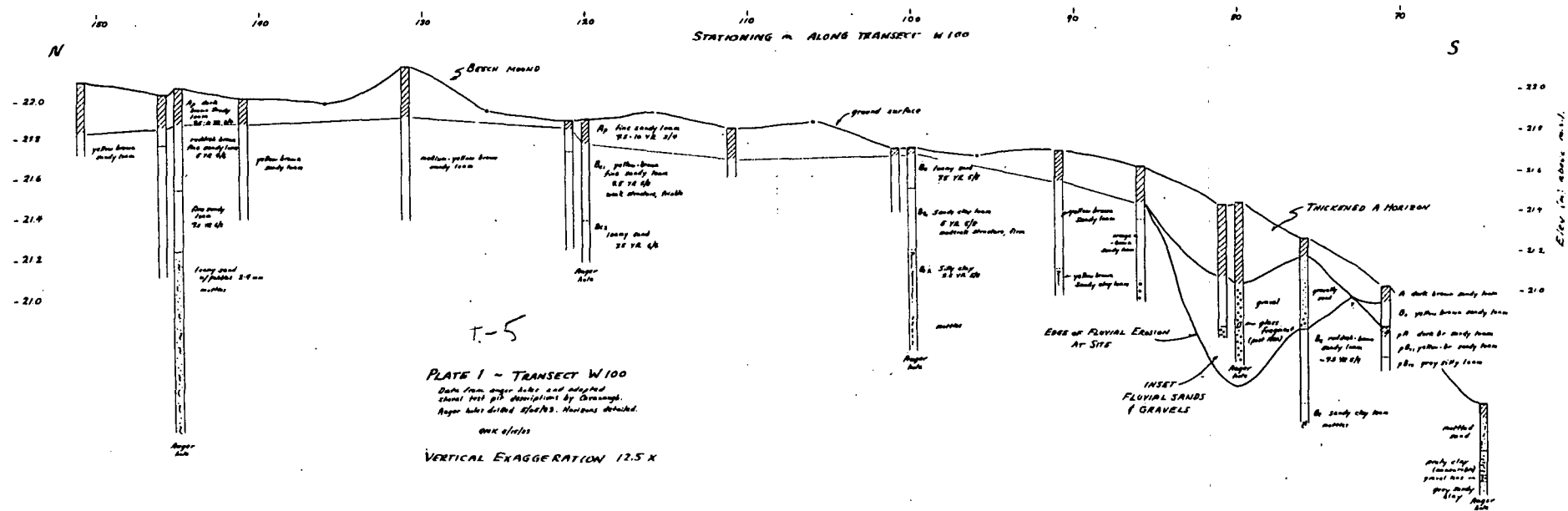


Figure 4. Soil profile at pit N118 W110, Kettering Site

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N

STATIONING (m) ALONG TRANSECT WHE

S

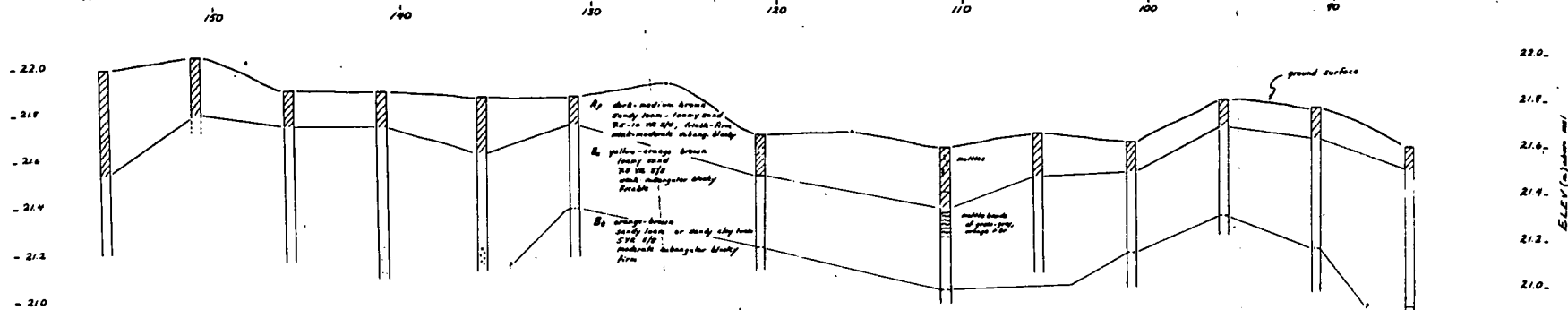


PLATE 2. WHE TRANSECT, KETTERING SITE
data adapted from Coppenaert's sheet and
pit descriptions (map) horizons generalized.

ONE SHEET

VERTICAL EXAGGERATION 12.5 X

Figure I-6

57

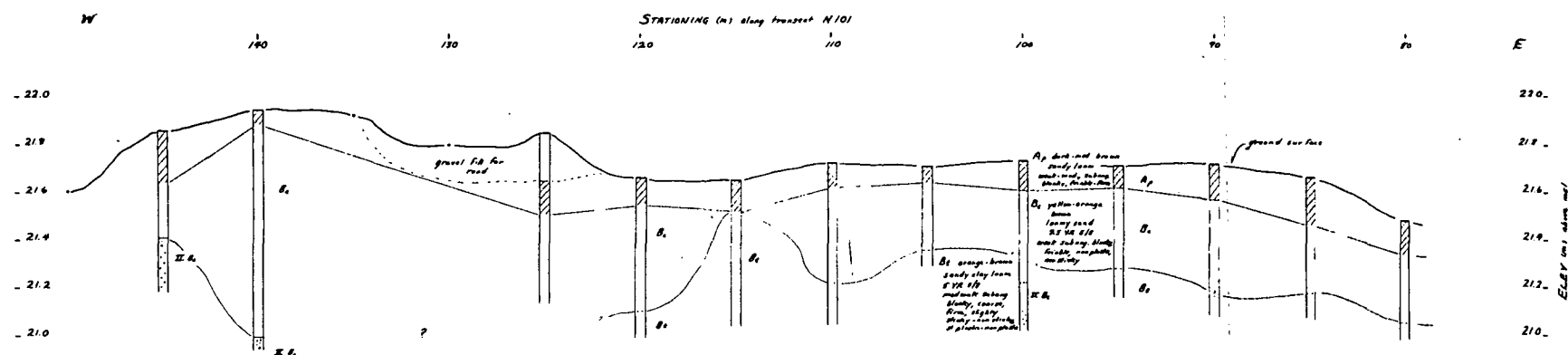


PLATE 3. N101 TRANSECT, KETTERING SITE
data adapted from Caranough's descriptions
of shovel test pits. Horizons generalized.

GMR 6-10-83

VERTICAL EXAGGERATION 12.5X

Figure I-7

58

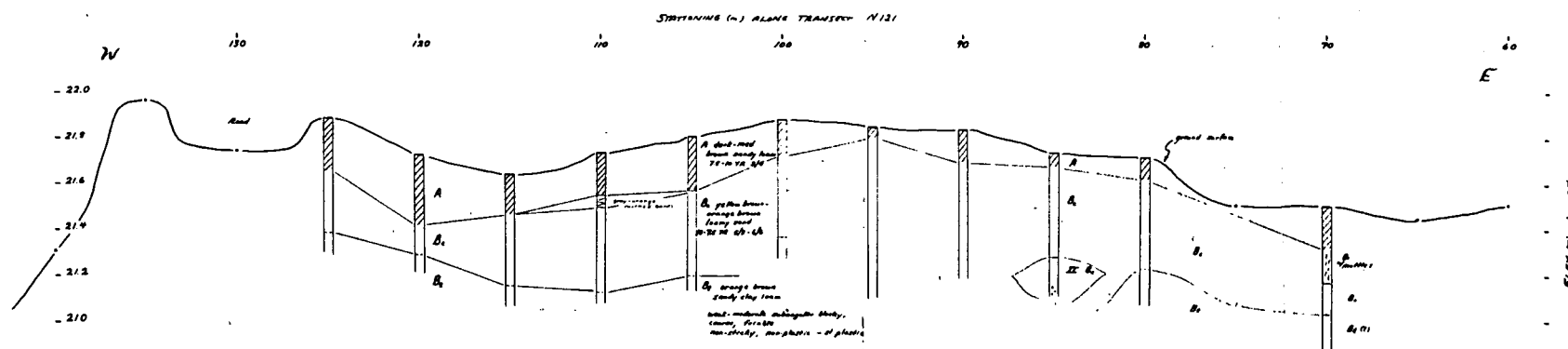


PLATE 4. TRANSECT N121 KETTERING SITE

Data adapted from Cavanagh's description of
shovel test pit data. Horizontal groundline.

ONE 5-15-83

VERTICAL EXAGGERATION 12.5X

Figure I-8

<u>Location</u>	<u>Criteria</u>	<u>Age</u>	<u>Source</u>
Iowa	Illuvial clay	100 yrs	Hallberg, Wollenhaupt and Miller, 1978
Pennsylvania	Clay films	450 yrs	Cunningham et al., 1971
Iowa	Illuvial clay	1100 to 1800 yrs	Daniels and Jordon, 1966
Iowa	Clay films-argillic	< 2000 yrs	Dietz and Ruhe, 1965
Pennsylvania	Illuvial clay	2000 yrs	Bilzi and Ciolkosz, 1977b
Iowa	Clay films	2500 yrs	Parsons, Scholtes and Riecken, 1962
Oregon	Clay firms - argillic	2350 yrs to 5250 yrs	Parsons and Herriman, 1976 Balster and Parsons, 1968
New Mexico	Argillic	> 5000 yrs	Gile and Grossman, 1968; Gile and Hawley, 1968

Table 2. Rates of clay migration and accumulation and rates of argillic horizon formation.

Reproduced from Hall et al. (in press)

soil formation are influenced by climate, microclimate, drainage, parent material size and minerology, vegetation, and erosional or depositional modifications after onset of pedogenesis.

Many studies of soil formation rates are reviewed by Hall et al. (in press). Table 1, taken from their report, indicates that translocation of clay can occur in as little as 100 years or less (Hallberg et al. 1978). More comparable are the data of Bilzi and Ciolkosz (1977), indicating that illuvial clay is found after 2000 years of development on alluvium in the Pennsylvania Appalachians. Taken as a whole, these studies suggest that about 2000 years minimum are needed to develop an argillic B horizon.

At the Kettering site, the parent material is extremely sandy. This would serve to accelerate pedogenesis because the surface area to be weathered is less than in a finer-grained parent material. However, the site's low topographic position and consequent poor drainage would serve to slow pedogenesis by preventing optimal aeration.

The combination of red color and argillic B development suggest that the parent material for the B horizon (for the main body of the site) may have been deposited $10,000 \pm 4000$ years B.P. (R. Jacobson, personal communication, 1983). This is a floodplain setting, so alluvial deposition is the norm. Accordingly, the deposition of 20-30 cm of sediment over the past 2000 years suggested by the archeological evidence is very likely from a geomorphic standpoint.

EROSION OF THE SITE

Pronounced thinning and thickening of the A horizon is apparent in Figure 1-5. Several factors may have contributed to this phenomenon: erosion of the surface by sheet wash, trapping of sediment by tree roots, disturbance by plowing, and disturbance by heavy equipment.

Plow scars indicate that the site was once farmed, but it is now forested, primarily by beech trees ~~25-30~~ cm in diameter. ✓

30-50

A cut stump of unknown species (not beech) and about 30 cm in diameter is located near the highway. Its 120 annual rings suggest that the present stand is well over a century in age. Some trees in the north-central and eastern part of the site are on mounds about 20 cm above the surrounding ground surface (see Figure I-2). Roots are fully or partially exposed on the mounds. It is unclear whether these mounds indicate lowering of the surrounding surface by erosion or raising of the mound by 1) accumulation of soil at the base of the tree or by 2) growth of tree roots and heaving the soil. Mounds are found not only under beeches, but under other trees as well. If the beech mound located at N131 W100 (Figure I-5) is representative, the thickening is restricted to the A horizon, suggesting either erosion of the surrounding surface or trapping soil at the tree base, not heaving.

Only 12 km east of the District of Columbia, the site is in an area that has undergone rapid urbanization over the past 25 years. Early 1960s aerial photography of the site (for Soil Conservation Service) shows the site and the adjacent floodplains of the Western and Northeastern Branches of the Patuxent were heavily forested. When the Kettering development was constructed, much of the floodplain was cleared of trees. On the alluvial terrace at the site, trees were thinned and the underbrush cleared out (Richard Naegele, surveyor, personal communication, 11 May 1983). A park now exists on the site. The heavy equipment used in creation of the park and removal of trees probably disturbed upper soil horizons.

EROSION OF SITE EDGE

The edge of the stable surface at the site is determined primarily by 1) road construction (on the north edge) and 2) fluvial erosion by the Northeast Branch (southeast edge) and by the Western Branch (western edge). Paleocourses of the two streams are shown in Figure I-1. They are taken from the Lanham 7.5' Quadrangle, photorevised in 1979. It is clear that these channels formerly abutted the edges of the site. The old mill over the Western Branch and its mill pond (Figure I-1) do not appear on aerial photography from the early 1960s (photo base for Kirby et al. 1967) and are reported to have been put there as part of the landscaping for the Kettering development (Richard Naegele, surveyor, personal communication). Thus, it appears that the present

channels are artificial and that prior to development, the streams flowed along the edge of the site, where they could be expected to erode and deposit during high flows.

Pits, auger holes, and STP descriptions were examined for holes at the edges of the site. By correlating the described and dated gravel in test unit N80 W100 with gravel and sand in STP descriptions, the extent of inset fluvial gravel and sand is reconstructed in Figure I-2, depicted by the solid line. The correlation is uncertain since the gravels and sands in the STPs and described by Kavanagh (unpublished data) were not observed by the author. If this correlation is correct, the landward edge of the inset gravel represents the edge of erosion of the site. If the gravels described in STPs are not modern and thus not correlative, then the edge of erosion of the site is farther south, depicted by the dashed line in Figure I-2.

SUMMARY AND CONCLUSIONS

The Kettering site, located on a low alluvial terrace, is underlain primarily by fine-medium well sorted fluvial sands, derived from greensand outcrops of the uplands. Occasional gravels underlie and predate the principal sandy unit, and modern gravels are inset along the southeast margin of the site, suggesting erosion of the bank and emplacement of a point bar by high flows on the Northeast Branch. A fresh fragment of glass (probably ca. 1950s or later) found in the gravel indicates that the event was recent.

Most pits show development of an argillic B horizon, with occasional thin clay skins and weak-moderate structure. The redness of these soils and the presence of an argillic horizon suggests a minimum age of 2000 years B.P., more probably 10,000 years B.P. \pm 4000 years for deposition of the parent material in the B horizon. Accumulation of 20-30 cm of sediment above this level over the past 2000 years is consonant with the pedologic evidence and the floodplain setting.

As mentioned above, the southeast edge of the site has been eroded by the Northeast Branch. The A horizon of the site has been disturbed by plowing, heavy equipment, and possible sheetwash erosion or colluvial movement.

APPENDIX II

CERAMICS AT THE KETTERING ^{PARK} ~~PART~~ SITE ✓

by

KATHERINE DINNEL

MARCEY CREEK

Number: 1 body sherd
Temper: crushed steatite with medium grained sand & mica
Paste and Texture: chunky friable paste with a soapy feeling to the surface
Thickness: 11.4 mm
Surface: plain; hand-smoothed exterior with an uneven wavy appearance
Decoration: none
Comments: This sherd appears to be from near the base of a thick, slab-constructed vessel
Chronology: Early Woodland 950 ± B.C. (Gardner and McNett 1971)
1200-900 B.C. (Manson 1948, Egloff and Potter 1982).

SELDEN ISLAND

Number: 1 body sherd
Temper: crushed steatite generally less than 1 mm with one chunk 10 mm in diameter
Paste and Texture: compact hard paste with a distinctly soapy texture
Thickness: 5.6 mm
Surface: cord-marked with thin close-set cord
cord dimension: 1-2 mm thick cord set: 1-2 mm
Decoration: none
Comments: typical Selden Island sherd
Chronology: Early Woodland 1000-100 B.C. (Slattery 1946, Wise 1975, Stepanoitis 1981).

ACCOKEEK WARE (3 varieties)

A2 "sandy" Accokeek cordmarked

Number: 1 rim, 1 base, 42 body sherds

Temper: medium to coarse sand with varying amounts of crushed quartz

Paste & Texture: coarse friable paste with a very gritty or sandy texture. Paste colors include orange, red, tan, brown, grey, and black with most sherds mottled by two or more colors

Thickness: range 4.5-10.1 mm; mean 6.59 mm

Surface: cordmarked with a cord wrapped paddle on exterior surfaces. The cord appears to have been loosely twined with an S-twist generally 1-2 mm thick. Spacing of the cord ranges from 2-4 mm and usually angles down towards the right from the rim at less than 45°. Occasionally the cord impressions are crisscrossed or angled down to the left from the rim. Interior surfaces appear to have been smoothed.

Decoration: none

Comments: Rim sherd is straight and thinned to sharp edge at lip. The base sherd is thick with a thumb print visible on the interior and has smoothed over cordmarking on the exterior surface. This "sandy" Accokeek ware fits the description for standard Accokeek cordmarked pottery from the Potomac River Valley (Stephenson & Ferguson 1983).

Chronology:

8. "coarseware" Accokeek

Number: 1 rim, 1 base, 51 body sherds

Temper: crushed quartz, 1 mm up to 11 mm though generally around 4 mm

Paste and Texture: moderately compact, chunky paste with a gritty or rough texture

Thickness: range 4.8-9.5mm; mean 6.77mm

Surface: cordmarked with a cordwrapped paddle in fairly plastic clay on exterior. Cord appears to have been loosely twined with an S-twist about 1-4 mm thick and spaced 2-5 mm apart. The cord-marking tends to angle down toward the right from the rim at 20-40° angles. Occasionally the cord-marking is almost parallel with the rim or angles slightly to the left away from the rim. Interior surfaces are usually smoothed or infrequently scraped.

Decoration: none

Comments: These sherds have all the characteristics of Accokeek cordmarked pottery except for the "sandy" texture. Possibly this pottery is a Piedmont version of Accokeek cordmarked. An unnamed, crushed-quartz-tempered ceramic was found in the top of the Early Woodland stratum (zone 1) at the Monocacy site (18M0) (Gardner and McNett 1971).

Chronology: Early Woodland

C. "mica-tempered" Accokeek cord-marked

Numbers:

*Total:

2 rims, 26 body sherds mended (2 rims, 79 body sherds, 15 sherdlets)

Temper:

fine micaceous sand

Paste and Texture:

fine grained slightly friable paste with a sandy texture. Glitter from mica noticeable on all surfaces

Thickness:

range 4.95-7.1 mm; mean 6.54 (**)

Surface:

exterior cord-marking, made with a fine cord closely wrapped around a paddle, runs parallel to the rim. Setwist cord is usually 1-2 mm, thick and is set approximately 1-4 mm apart, interior surfaces appear smoothed.

Decoration:

none

Comments:

Portions of a single vessel were paddle edge recovered from 3 contiguous excavation units and one nearby shovel test pit.

96 individual sherds mended to form a total of 28 sherds and vessel portions. This pottery is distinct from any other at 18PR174 and may be similar to Type D reported from the Accokeek Creek site by Stephenson and Ferguson (1963). The two rim sherds are straight, thinned and everted just at lip. Vessel morphology indicates an affinity with Early Woodland ceramics especially the Seldon Island and Accokeek wares (Figure). This pottery may represent an early Accokeek variety showing experimentation with temper (Artusy 1976). The cord-marking is more similar to that on the Seldon Island pottery than the deeper impressed, coarser cord on the Accokeek ceramics at 18PR174.

Chronology:

Early Woodland

Group I

Number: 40 body sherds
Temper: medium to coarse sand with occasional crushed quartz fragments
Paste and Texture: coarse friable paste has a sandy to gritty texture. Paste colors are a mixture of ferruginous oranges and dark greys
Thickness: range 4.4-10.2 mm; mean 6.66 mm
Surface: eroded exterior surfaces, smooth or eroded interior surfaces
Decoration: none
Chronology: Early Woodland?
Comments: paste and thickness of several sherds at first suggested relationship to Popes Creek pottery. Comparison to "sandy" Accokeek ware from Kettering showed many similarities with the Group I sherds including paste texture, color and average maximum thickness. Connections with the Accokeek ware are reinforced by the absence of any identifiable Popes Creek ceramics at this site.

MOCKLEY WARE

Number: 1 rim, 12 body sherds
Temper: crushed shell that has leached out^t leaving numerous small to large irregular holes
Paste and Texture: chunky friable paste with a chalky texture, paste has a contorted appearance
Thickness: range 5.9-9.15 mm; mean 7.48 mm
Surface: net-impressed (n=10) with a close set mesh composed of small knots producing a bumpy exterior surface. Three sherds have a fabric-impressed exterior surface (weft face mat with a mod. rigid warp (6-8 mm wide) spaced 2-4 mm apart and woven with a close set loosely twisted cord

?
spell out

weft). Maximum thickness measurements of these three sherds are comparable to the other Mockley sherds at 18PR174 (6.8, 7.3, and 8.95 mm)

Decoration: none
Chronology: Middle Woodland A.D. 200 - A.D. 800
Comments: the rim sherd (net-impressed) is straight and thinned at lip edge with no decoration. Generally fabric-impressed shell-tempered sherds are placed in the Townsend ware series. The three sherds discussed here (probably from the same vessel) have distinct Mockley ware paste - poorly paddled and contorted with large holes from leached shell chunks.

Fabric-impressed ceramics though tempered with varied crushed rock and sand are known for the Middle Woodland period in the Mid-Atlantic Region. These wares include Nomini Fabric-Imprinted, A.D. 700 - A.D. 900 found with Mockley ceramics at 44WM119; Hercules Ware A.D. 200 - A.D. 900, inter coastal plain of central VA; and Hell Island A.D. 600 - A.D. 100, central and northern Delaware.

Possibly these sherds indicate a transience from Mockley ware into the Townsend series with the fabric-impressions preceding the _____ ceramic technology seen in Late Woodland ceramics. Sample these comments are only conjectural and need further excavation data for proof or disproof. ? ?

References: Stephenson and Ferguson 1963, Artusy 1976, Griffith 1982, Egloff and Potter 1982.

TOWNSEND WARE

Number: 1 base, 36 body sherds

Temper: finely crushed shell with occasional hematite inclusions. Several sherds contain notable amounts of sand or grit; sometimes exceeding the percentage of the identifying shell temper

Paste and Texture: fine, well-paddled paste with aligned leached-out thin shell holes. Generally the paste has a smooth and chalky texture, though the sherds with a high sand or grit content have a distinct sandy texture.

Thickness: range 4.85-8.75 mm; mean 6.4 mm

Surface: Fabric-impressed on exterior surfaces. The textile utilized appears to have been a weft-face weave with a moderately rigid warp and a thin flexible twisted cord weft. Warp width: 5-9 mm; weft width: 1-2 mm. The interior surfaces are generally smoothed; infrequently scrapped.

Decoration: Incised - two sherds have 2 or 3 straight incised lines on an otherwise plain surface. Assignment to a specific variety is not possible due to a lack of rims and the smallness of the sherds.

Chronology: Late Woodland A.D. 900 - 1000 A.D. 1600 (Blaker 1963, Stephenson and Ferguson 1963, Egloff and Potter 1982)

Comment: small sample of small sherds. Incised decoration suggests the first half of the Late Woodland period (Griffith 1980, 1982).

POTOMAC CREEK WARE

Number: 1 rim, 7 bases, 17 body sherds
Temper: crushed quartz and fine to coarse sand; fine sand temper includes mica
Paste and Texture: hard compact finely made paste with occasional sandy texture
Thickness: range 4.35-8.95 mm; mean 6.3 mm
Surface Treatment: cord-marking (3); Plain (4); undeterminable (6)
Decoration: none
Chronology: Late Woodland A.D. 1300 - A.D. 1700 (Stephenson and Ferguson 1963, Clark, 1980, Egloff and Potter 1982)
Comments: one flat straight rim

MOYAONE WARE

Number: 6 body sherds
Temper: fine sand with mica inclusions
Paste and Texture: fine grained compact paste with a smooth texture
Thickness: range 4.5-7.15 mm; mean 5.7 mm
Surface Treatment: plain
Decoration: one incised sherd, possible chevron design
Comments: Late Woodland A.D. 1350 - A.D. 1600 (Stephenson and Ferguson 1963, Egloff and Potter 1982)

APPENDIX III

QUALIFICATIONS OF INVESTIGATORS

QUALIFICATIONS OF INVESTIGATORS

MAUREEN KAVANAGH

M.A. in Anthropology, The University of Wisconsin, Madison. Six years of experience in field archeology.

SILAS D. HURRY

B.A. in Anthropology and B.A. in History, St. Mary's College of Maryland, st. Mary's City, Maryland. Eleven years of experience in field archeology. ✓

EDWARD CHANEY

B.A. in Anthropology, The University of Maryland, College Park. Three years of experience in field archeology.

KATHERINE J. DINNEL

M.A. in Anthropology, Florida State University, Tallahassee. Six years of experience in field archeology.

SPENCER O. GEASEY

Over thirty years of experience in Maryland archeology.

G. MATHIAS KONDOLF

✓ PhD. candidate in Geograph~~y~~ and Environmental Engineering, the Johns Hopkins University, Baltimore, Maryland.

APPENDIX IV

COST AND TIME ESTIMATE FOR MITIGATION

APPENDIX IV
COST AND TIME ESTIMATE
KETTERING PARK - PHASE III
(FY 86 rates)

FIELDWORK

Archeologist #1, 12 days @ \$130/day	\$ 1,560
Archeologist #2, 12 days @ \$125/day	1,500
Assistant Archeologist, 12 days @ \$100/day	1,200
Crew Chief, 12 days @ \$75/day	900
6 crew members, 10 days @ \$65/day	<u>3,900</u>
	<u>\$9,060</u>

LABORATORY WORK

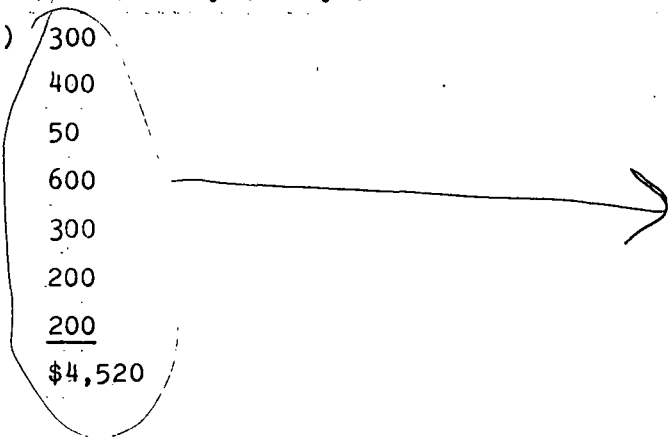
Archeologist #1, 5 days @ \$130/day	\$650
Archeologist #2, 5 days @ \$125/day	625
Assistant Archeologist, 37 days @ \$100/day	3,700
Crew Chief, 37 days @ \$75/day	2,775
3 crew members, 19 days @ \$65/day	<u>3,705</u>
	<u>\$11,455</u>

REPORT PREPARATION

Archeologist #1, 32 days @ \$130/day	\$4,160
Archeologist #2, 32 days @ \$125/day	4,000
Secretary, 33 days @ \$85/day	<u>2,805</u>
	<u>\$10,965</u>

DIRECT COSTS

Mileage, 3000 miles @ \$.19/mile	\$570
Per diem (5) 2 ¹ / ₂ weeks @ \$40/day (4 days)	2000
Camera (2 ¹ / ₄ format)	300
Report Duplication	400
Xerox	50
Telephone	600
Field Supplies	300
Lab Supplies	200
Radiocarbon	<u>200</u>
	\$4,520



TOTAL CONTRACT:

\$36,000

Dennis'
review
copy

page

Abstract

Acknowledgements

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Park Site, by G. Mathias Kondolf

Appendix II Tabulation and Description of Ceramics, by
Katherine Dinnel

ACKNOWLEDGEMENTS

Funding for the Phase II testing at the Kettering Park site was provided by the Maryland State Highway Administration. Special thanks go to co-worker Silas Hurry, who assisted with research design, fieldwork organization and assessment of the site. Edward Chaney, Katherine Dinnel, and Spencer Geasey served as a dedicated field crew. Laboratory work was undertaken by Katherine Dinnel and Edward Chaney. In addition, Katherine Dinnel analyzed the ceramics; the results are tabulated in Appendix II and summarized in the report. Illustrations were a group effort: Ed Chaney, Silas Hurry, Lori Frye, and Katherine Dinnel all contributed; photographs were taken by Silas Hurry. The pedological analysis was performed by Mathias Kondolf, whose findings are in Appendix I.

In addition to all those individuals mentioned above, thanks go to Tyler Bastian and Dennis Curry for reviewing the draft of this report and making helpful suggestions for its improvement, and to Elizabeth Winterstein for typing the report.

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INTRODUCTION

The Kettering Park aboriginal site (18PR174) was located by Terrence W. Epperson in 1979 during a Phase I archeological reconnaissance for the State Highway Administration along Route 214 in Prince Georges County, Maryland. A proposed dualization of Route 214, would extend the roadway approximately 40 meters southward, ^{subjecting the site to impact} impacting the site. Epperson (1979) recommended Phase II archeological testing in order to assess the nature, extent, and integrity of the site.

ENVIRONMENTAL CONTEXT

The Kettering Park site is located in the western shore division of the Coastal Plain physiographic province (Vokes and Edwards 1974:37) approximately 16.8 km (10.5 m) south-southeast of the ^{Fall} ~~fuel~~ line. It is situated on a low terrace northeast of the confluence of the Western Branch and the Northeast Branch (both 3rd order streams) in the Patuxent River drainage, approximately 22 m above sea level. The site is about one meter above the watercourses and is subjected to seasonal flooding. The site is currently used as a park and picnic area, and is lightly forested, primarily with beech trees of 20-30 cm diameter. Erosion of the site is suggested by mounds of soil around the bases of the trees (see Appendix I).

Map research has suggested that the site was heavily forested until very recently. The U.S.G.S. 15' Topographic Quadrangle shows no structures or roads nearby. The 1938 aerial photo shows no evidence of farming or clearing. However, as Kondolf describes a plowzone for this site it evidently was farmed at sometime in the past (see Appendix I).

The stream beds of the Western Branch and the Northeast Branch were relocated sometime between 1965, when the base map for the U.S.G.S. 7.5' Lanham Quadrangle was prepared, and 1979, when the map was photorevised (Figure). Figure depicts the old and current channels in more detail.

The site's first terrace elevation and its proximity to both branches has subjected the site to the effects of flooding, which would include both deposition and admixing of stream sediments, and erosion, particularly along the edges of the site. These effects are considered in detail in the geomorphology study. (Appendix I)

PALEOENVIRONMENTAL CONTEXT

The study area has been subjected to a series of climatic changes over the last 10,000 years which has resulted in concomitant shifts in hydrology, topography, and the dominant flora, and fauna. During the last glacial advance at approximately 10,000 B.C., the sea level was as much as 100 to 105 meters (325-341 ft.) below current levels. All of the extant estuarine areas, including the Chesapeake Bay, were fresh-water riverine systems. From about 10,000 B.C. to 6000 B.C. the sea level rose rapidly, at a rate of about one meter per century. Between 6000 and 1700 B.C. it slowed to 0.3 meters/century (Kraft 1976:97). The gradual slowing of the rate of inundation led to the stabilization of the brackish-water estuaries, probably sometime around 4000-3000 B.C. (Wilke and Thompson 1977).

A warming trend in the climate succeeded the glacial epoch. From about 8500 to 6500 B.C., the climate changed from cold and moist to cool and drier (Carbone 1976). Vegetation changed from tundra-like conditions to primarily coniferous forests with some deciduous elements. Temperature continued a basic warming trend until it reached a maximum around 2300 B.C. This warm, dry period is referred to as the xerothermic (or altithermal). Sometime prior to this, probably by about 4000 B.C., the deciduous forest became dominant, replacing the conifers. From 2300 B.C. to the present the trend has been to slightly cooler, moister conditions, with only minor fluctuations in native floral elements.

ARCHEOLOGICAL CONTEXT

The prehistory of the Middle Atlantic region can be divided into three broad periods: the Paleoindian, the Archaic, and ^{the} Woodland.

The Paleoindian^{period}, which covers a time from 11,000 - 8000 B.C., is represented at a few sites in the region: Thunderbird in the Shenandoah Valley (Gardner 1974) and Shawnee-Minisink in the Delaware River Valley (McNett 1974, 1975). Isolated finds of characteristic fluted points indicate the presence of Paleoindian populations in Maryland (Brown 1979) and throughout the Middle Atlantic. It is postulated that Paleoindian populations were small, and that subsistence needs were met by large game such as mammoth, mastodon, sloth, caribou, moose, bison, as well as a variety of smaller mammals, fish and plant foods.

The Archaic ¹⁶Period dates from approximately 8000 to 1000 B.C. During this time span the populations gradually increased. Subsistence activities changed as did available resources; deciduous forest-inhabiting mammals such as bear, deer, ^{2nd} elk, came to dominate the hunted resources, while estuarine resources of fish, seafood, and waterfowl figured prominently in the prehistoric diet after 3000 B.C. This period is recognized primarily by characteristic side-notched, basal-notched, and stemmed projectile points which have been dated in context along the Atlantic seaboard (c.f. Coe 1964; Kinsey 1972; Ritchie 1971). Toward the end of the Archaic, axes, ³ adzes, and ³bowls appear in the artifact assemblage, possibly indicating a more sedentary existence.

The Woodland period covers a span from about 1000 B.C. when pottery is first introduced, to the time of European contact, ca. A.D. 1600-1700. This period is divided into three parts and was probably a time of intense change in subsistence activities and social interactions and organization. Early Woodland site locations suggest a more sedentary, ¹⁶riverine-oriented lifeway ^{Thon?} was the case during the Archaic, and there may have been more reliance on marine resources and perhaps cultigens such as amaranth and sunflowers. A noticeable subsistence change during the Woodland period was the introduction of agriculture by around A.D. 1000. Many Late Woodland populations lived in

permanent or semi-permanent villages, and grew maize, beans, and squash. Outlying temporary or short-term camping sites rounded out the occupational picture.

PREVIOUS RESEARCH

The Kettering Park site was located by Terrence W. Epperson, Dennis Curry, and Spencer O. Geasey during an archeological reconnaissance ^{of} ~~to~~ the Maryland Route 214 corridor in July, 1979 (Epperson 1979). Surface visibility was about 60%, allowing surface collection of diagnostic artifacts and representative debitage. In addition, six shovel test pits were excavated, with all material screened. The pits were 45-60 cm in diameter and 45-60 cm in depth. According to Epperson, most of the cultural material seemed to come from the interface between the top, darker humus layer and the lower, more reddish and sandy layer. The approximate locations of the shovel test pits are depicted in Figure 4 (from Epperson 1979). Material recovered from the pits consisted of quartz-tempered and shell-tempered ceramics, quartz, quartzite, rhyolite, chert and jasper debitage, one quartz biface, and a possible hammerstone. Artifacts recovered from the surface were sand-tempered pottery, 2 triangular quartz projectile points, 1 expanding stem quartz projectile point, 2 quartz biface fragments, 1 chert biface fragment, chert and jasper flakes and quartz and quartzite debitage.

Based on the material retrieved from the testing, Epperson postulated a primary Late Woodland component at the site. However, a reanalysis of the Phase I material by the present investigator shows 6 Accokeek sherds, 1 Popes Creek sherd, and 5 Mockley sherds in the sample. A Vernon point dating to the Late Archaic was also recovered. Together the material suggests periodic reoccupation of the site from the Late Archaic through the Late Woodland.

FIELD WORK

Phase II investigations were carried out from April 12 to May 24, 1983. The fieldwork consisted of shovel test pitting to determine site limits and artifact distributions, and excavation of controlled test units to evaluate stratigraphy and assess the potential for preservation of features and in situ cultural remains.

Shovel test pits were dug at five-meter intervals across the site (Figure). Limits to the site were found to the east, south, and west. The current alignment of Route 214 forms the northern boundary. Across Route 214 to the north a sewer line was laid and a steep slope rises immediately beyond that. Based on topography and the placement of the road and sewer line the entire site or the remains of this site are to the south of Route 214.

Generally the site limits as determined by Phase II testing are confined to the area above the 21.5 m contour interval (Figure). One part of this contour was not tested, on the southwest. Since our testing had characterized the site sufficiently, testing this area was not pursued; but instead efforts were concentrated on the portion of the site within the proposed impact area (~~see Figure~~).

Shovel test pits (166 total) were approximately 35 cm in diameter and were dug to sterile subsoil (anywhere from 42 to 100 cm below surface; most around 60 cm). Soils were sifted through 1/4" mesh screen and all cultural material retained. Stratigraphy was recorded in each pit before backfilling. In approximately 30 STPs, ground water was encountered before subsoil was reached, varying from 22 cm to 73 cm below surface (most around 45-50 cm below surface).

Following the shovel test pitting, areas were selected for controlled test excavations based on artifact distributions and stratigraphy. Ten one-meter sources and one 1.5 by 1.5 meter unit were excavated (see Figure for locations). These were excavated in natural layers (if layer was shallower than 10 cm) or 10 cm arbitrary levels within natural layers.

G. Mathias Kondolf, Ph.D. candidate in pedology at Johns Hopkins University, visited the site on three separate occasions to undertake a soil analysis. His report is attached as Appendix I.

ARTIFACT DISTRIBUTIONS

The distributions of various classes of cultural material from the shovel test pits were plotted in order to determine the locations of clusters. First, maps depicting the total flakes and fire-cracked rock (Figure) show two main activity areas, one on the northern edge of the site and another toward the southern end. Flakes are dispersed across the entire site as well. When mapped according to the raw material (quartz, quartzite, rhyolite, and cherts), distributions did not differ from the overall pattern.

The distribution of ceramics on the site (Figure) depicts a light scattering across the site, with concentrations in the center and southern parts of the site. When plotted by ceramic type according to period (Figures _ and), most of the ceramic types are dispersed across the site, with no noticeable clustering. The only exceptions are the Late Woodland types, (Potomac Creek, Townsend, and Moyaone), which show a tendency to occur in the central and southern portions of the site.

The last distribution map shows the point distributions, from the shovel test pits and the meter squares as well (Figure). The periods represented by (through) these tools include Late Archaic (9), Terminal Archaic (5), and Late Woodland (5). A summary of points recovered is in Table . An examination of the distributions indicates a dispersal of individual types and types by time period across the site, again lacking any spatial clustering. Based on these maps no isolated clusters were defined at the site; rather, the material was assumed to be from a mixture of components ranging from the Late Archaic through the Late Woodland.

E Wood pts?

STRATIGRAPHY

The soil at the Kettering site is mapped as Bibb silt loam ~~in the Prince Georges County Soil survey~~ (Kirby et al. 1967), a poorly-drained soil where "in a few areas the surface layer contains medium-sized sand and feels gritty" (1967:19). Bibb silt loam occurs in floodplains and is wet for long periods.

The parent material of the soil is primarily well-sorted fine and medium sand, with minor amounts of gravelly sand, sandy gravel, and silty sand (Kondolf, Appendix I), most likely fluviially deposited.

Kondolf's analysis of the soils identified an Ap horizon, a cambic B and argillic B horizons. Based on the development of the argillic horizon, Kondolf estimates an age for the soils of at least 2000 years, and more likely 10,000 B.P. [±] 4000 (see Appendix I).

The A horizon has pronounced variation in thickness due to erosion of the surface by sheet wash, trapping of sediment by tree roots, and disturbance by plowing and by heavy equipment. In addition the edges of the site on the south, east and west have been eroded.

The soil profiles encountered in the shovel test pits showed the main body of the site underlain by either a strong brown sandy clay loam or a yellowish brown sandy clay loam, interspersed with pockets of strong brown or yellowish brown sandy loam and gravel, primarily on the north and south edges of the site.

Stratigraphy of the Meter Squares

In the excavation of the meter squares no cultural features were encountered. A general summary of the stratigraphy of the squares is given here, with exceptions noted.

In most squares a humus layer consisting of a dark brown silt loam varying from 3-14 cm thick was removed. In square 7 (Figure) there was no humus development. All of these humic layers contained modern material, primarily glass and pop tops.

Underneath the humus was a mixed A horizon, with a plowzone evident in some squares, and wash layers and apparent flood disturbance in all. Only one square showed a plowscar (Square #7), and only one other (#3) showed a definite plowzone. The profile of this square is illustrated in Figure . There were 10 different Munsell colors recorded for the mixed wash/plowzone layer; all of the squares showed mottling of at least two colors. Texturally the soils were a silt loam or a sandy silt loam; in some squares the layer had silt loam at the top which graded into sandy silt loam at the bottom of the layer. This layer varied in thickness from 5 to 21 cm, with an average thickness of 10.5 cm. Where the plowzone existed it averaged 14 cm. In all of these layers, modern material was present in the form of glass, coal, plastic and other 20th century debris.

Under the mixed wash and plowzone remnant layer is a strong brown sandy loam or sandy silt loam layer which varied from 17 cm to 35 cm in depth, with an average thickness of 25 cm. Artifacts were retrieved from throughout this layer although most heavily concentrated near the top. No modern material came from this layer (see Table 1).

Squares were continued until a sterile level was reached. The one exception to this was square #6 in which the pedologist inadvertently dug his trenches before the archeological excavations were completed. In five of the squares a "B" horizon was encountered, 4 of them^{2a} argillic horizon and in one a sand horizon. In the remaining five squares, the A₂ horizon continued and gradually became sterile of artifacts. The demarcation between the "upper" and "lower" A₂ was only a slight leaching. Table 1 depicts the gradual decline in artifact concentrations down through these profiles. The termination depth of the pits varied from 40 cm (in square #6 where the sterile zone was not reached) to 83 cm, with an average depth of 58 cm.

Squares
(STPs vary from 42-100 cm)

Stratigraphic Integrity

Table 1 lists the diagnostics recovered by level ~~and~~ by natural soil layer. Layers containing diagnostic artifacts which are not affected by modern disturbance are starred. Since the top layers of the A₂ horizon often contained some material from the interface between the plowzone wash and the A₂, the diagnostics for which exact provenience were taken and which were definitely from below the disturbed soils are listed in Table 2. In square 11, there is "reverse stratigraphy", that is, there is a mixture of Terminal Archaic, Late and Early Woodland material in Level , a Normanskill point in Level (Figure), and an Accokeek sherd in Level . This square showed quite a bit of disturbance due to flooding and erosion, since it is near the southern edge of the site.

In all of the other squares, there is a strong suggestion of an undisturbed Accokeek component beneath the disturbed soil, as 10 of the 11 squares had Accokeek coarseware, or friable sand-tempered ceramics in the layer immediately below the plowzone-wash layer. When only provenienced sherds and artifacts well below the interface, ^{are considered?} (Table 2), there are 29 Accokeek and other early Woodland ceramics in this level (excluding square 11) and no other diagnostics. Given the presence of Early, Middle, and Late Woodland diagnostics in the plowzone, the presence of E.W. artifacts cannot be attributed to natural processes since a mixture of materials would be expected. The current interpretation is that this is a floodplain stratified site in which the soil has accumulated at least 20-30 cm in the last 2000 years by deposition of silt. Subsequent modern disturbance, primarily plowing and flooding events, has mixed some of the Early, Middle, and Late Woodland material in the top 15-25 cm, while preserving a portion of the Early Woodland cultural material immediately below it.

The only other temporally diagnostic artifact in good context was a Savannah River Stemmed point (Figure ,), from level 4 in Square #7 (26.5 cm - 36.5 cm below surface, near the bottom of the level). This suggests that a Late Archaic/Terminal archaic occupation remains may also be segregated stratigraphically; however, evidence for this is rather scanty based on the current testing.

ARTIFACT ANALYSIS

Ceramics

The ceramic types recovered from the Phase II testing are summarized in Table 3. All of the ceramics were typed except for two groups, termed "coarseware" and "Group 1". These are defined below.

Attributes of the ceramics, analyzed by Katherine Dinnel, are presented in summary form in Appendix II.

The group termed "coarseware" is an Accokeek variant, which is tempered with large (up to .5 cm) crushed quartz particles, with a very slightly sandy paste. They differ from the ^{debris?} Accokeek pottery primarily in the small quantity of sand in the paste. Another difference is that the Accokeek cord-marked ranges more toward a reddish brown, while the coarseware has a light yellowish brown color. This is probably reflective of the difference in paste.

The surface treatment of the coarseware is predominantly with a cord-wrapped paddle (n=). The cord markings are deeply impressed into the clay, and are widely spaced (mm).

TABLE 2

Square #	Level	Depth Below Surface	Diagnostics Below Modern Disturbed Soil
1	4	27-37cm	*1 Accokeek
2	3	15-25	1 coarseware
3			22
4	4	24-34	2 sand-tempered sherdlets
5	3	21-30	*3 coarseware and 1 Accokeek
6	3	20-30	1 coarseware
7	3	18-26.5	*1 Accokeek
	4	26.5-36.5	1 Savannah River point
8	4	32-42	3 Accokeek, 1 coarseware

9	4	27-37	4 Accokeek, 1 coarseware, 6 sand-tempered sherdlets
	5	37-47	1 sand-tempered sherdlet
10	3	19-25	1 coarseware, 1 sand-tempered and 1 quartz-tempered sherd
11	3	15-25	1 coarseware
	4	25-35	1 Accokeek
	5	35-45	1 coarseware
11a	2	6.5-19	1 Accokeek, 5 cord-marked coarseware, 1 fabric-impressed coarseware
11b	2	7-15	Madison point, Orient Fishtail, 1 Townsend sherd, 1 Potomac Creek sherds, 1 coarseware
	3	15-25	Normanskill point
	4	25-35	1 Accokeek sherd
11c	2	5.5-15.5	1 Accokeek, 2 cord-marked coarseware

* artifacts within 2 cm of top of level

TABLE 3

CERAMICS FROM PHASE II TESTING

Marcey Creek	1	0	1
Selden Island	1	0	1
Accokeek			
Coarseware *			
Group 1 *			
Popes Creek			
Mockley			
Townsend			
Potomac Creek			
Moyaone			
Unknown			
Sherdlets			
TOTAL:			

* Coarseware and Group 1, undefined types, are described in text.

** Mending sherds counted as one sherd. One large portion of an Accokeek vessel from N86W116, not counted here, is described in text.

Lithics

Material

Quartz is by far the dominant lithic material in the assemblage, followed by quartzite, rhyolite, chert (including jasper), silicified sandstone, sandstone, siltstone, slate (?), and ironstone.

The quartz, and quartzite, and chert are locally available in cobble form; the presence of chunks, shatter and cores is evidence for on-site tool-making. Silicified sandstone, sandstone, siltstone, and ironstone were likewise locally available, also in cobble and pebble form. ~~Only~~ rhyolite does not occur naturally in the immediate vicinity; the nearest source is in the western Piedmont some 140 km (88 miles) distant.

*occurs
in cobble
form?*

Table 4 indicates the lithics recovered from various aspects of the testing, and Table 5 shows the breakdown of the lithic categories by material.

The abundance of the local material should be reflected not only in the highest quantities, but also in the tool/debitage ratios. However, the lowest tool:debitage ratio, 1:53, is for rhyolite. This is difficult to explain as one would expect a higher ratio of tools in a locally scarce material. One possible explanation is a lower level of tool discard from this group than from quartz and quartzite. Quartz and quartzite were probably used for a wide range of expedient tools which were discarded at the site. Chert (1:19) and jasper (1:3) have the highest ratios, possibly reflecting local scarcity of this high-grade material. Another possibility is that evidence of retouch and utilization are more easily identified on the fine crypto-crystalline materials.

Points

Table 6 lists the points recovered, their provenience, and temporal affiliation. Most of the specimens are illustrated in Figure . The points cover a range from Late Archaic types to Late Woodland, with Bare Island and Madison types being the most numerous individual specimens.

In addition to those listed in Table 6, there were 10 projectile points and point fragments which could not be identified.

Other Tools

Fifteen bifaces were recovered in the testing, 11 of quartz, 3 quartzite, and 1 rhyolite. Some of these are illustrated in Figure . The likely functions of these tools were: knives (5), chopper/knife (1), scraper (3), and unknown (6).

Other tools consisted of retouched and utilized flakes, which represent a range of uses. The modified flakes were made of quartz (n=26), quartzite (n=4), chert (n=3), and jasper (n=8). As mentioned earlier, the higher representation of chert and jasper is due to the visibility of retouch and utilization scars along the edges; quartz and quartzite are probably under represented. The majority of the specimens were retouched on one or more edges. The possible functions are: 2 possible burins/gravers (Figure , ,), 7 scrapers, 2 knives/scrapers, 2 chopper/scrapers, 2 knives, and 1 chopper, and unknown (28). The "unknowns" were most likely used as expedient tools for a variety of cutting and scraping activities.

Other Lithics

Other lithics include hammerstones or abraders (6), a fragment of hematite, and 2 chunks of steatite. Also, there was an unusually high number of whole and cracked quartz pebbles and small quartz chunks in square #2 (N142W115), levels 3-5. In level 3 there were 61 whole quartz pebbles, 111 cracked pebbles, and 23 quartz chunks. In level 4 there were 91 whole quartz pebbles, 66 cracked quartz pebbles and 20 quartz chunks. Level 5 had 35 whole

pebbles and 49 cracked, with 6 quartz chunks. In each level there were also a small number (10) of sandstone and chert pebbles. The pebbles were nearly uniform in size ^(~ cm) and slightly over one half of them had one or two edges battered or they were split in half; they were not fire-cracked. The fracturing quality of the quartz was generally quite poor so rarely was there a negative flake scar; the quartz was chunky rather than of flaking quality. The average weight of the whole pebbles is 18 grams, and a histogram of the weights shows a normal distribution with very little deviation. An 18-gram pebble is too small for ideal tool-making, and even for use in cooking food (see Binford 1972:). The hypothesis proposed here is that these quartz cobbles were selected for crushing ^{of} tempering for pottery, as the quartz temper observed in the Accokeek pottery and in the coarseware is crushed angular quartz which would break nicely into chunks but would not be a good material for tool manufacture. If this is the case, then it could be inferred that pottery-making was occurring on the site, expanding the known range of activities that took place in this interior location.

TABLE 4

LITHICS FROM PHASE II TESTING

	TOOLS		DEBITAGE				
	Points	Bifaces <u>Modified</u>	Flakes	Flakes	Chunks	Shatter	Cores
Grab Surface							
Collection	7	22	22	22	22	22	22
Shovel Test							
Pits	8	6	20	664	21	32	0
Test Squares	14	9	21	1547	393	174	7
TOTALS:	29	15	41	2211	414	206	13

TABLE 5

CHIPPED STONE ASSEMBLAGE BY LITHIC MATERIAL

(Total from surface collection, STPs, and Test Units)

Lithic Material	TOOLS			DEBITAGE				TOOL: DEBITAGE RATIO
	Points	Bifaces	Modified Flakes	Flakes	Chunks	Shatter	Cores	
quartz	9	11	26	1405	390	179	10	1:43
quartzite	14	3	4	515	3	20	3	1:26
rhyolite	2	1	2	154	3	2	0	1:32
chert	2	0	4	74	18	5	0	1:16
jasper	1	0	8	30	0	0	0	1:3
silicified sandstone	1	0	0	21	0	0	1	1:22
sandstone	0	0	0	6	0	0	0	
siltstone	0	0	0	4	0	0	0	
slate	0	0	0	1	0	0	0	
ironstone	0	0	0	1	0	0	0	
TOTALS:	29	15	44	2211	414	206	14	

Other Cultural Material

Twenty bone fragments were recovered in the test excavations; 10 of them burnt. All were small and in deteriorated condition; none were identifiable as to species. The acidity of the soil (^{pH}PH=4.5) for Bibb silt loam (Kirby et al.) points to a very low likelihood of bone preservation.

1967

SUMMARY OF SITE OCCUPATION

Based on the limited sample obtained through Phase II testing some tentative statements regarding times of site occupation and possible activities can be made. However, any comparisons between assemblages from different time periods are limited by sample size and by our knowledge of the relationship between intensity of occupation and discarded artifacts.

There is some indication of Late Archaic occupation as evidenced by projectile points: Piscataway (2), Brewerton Side-Notched and Eared-Triangular Normanskill (2), Bare Island (3), Savannah River (1), Orient Fishtail (1) and Dry Brook (2). This coincides quite well with an increase in prehistoric activity through the Patuxent drainage (Steponaitis 1980:3) "Late Archaic ... Sites seem to be occurring in a broad variety of environmental zones--adjacent to the Patuxent, a long second and third order streams and adjacent to swamp areas" (1980:83).

Steponaitis

Brewerton points are not as common in Patuxent collections; Steponaitis does not mention Normanskill points in the collections. The Bare Island/Holmes on the other hand, "is the most abundantly represented point in the Patuxent drainage, suggesting a dramatic increase in the use of the study area (1980:85).

Steponaitis

Savannah River, Orient Fishtail, and Dry Brook are relatively scarce in the Patuxent. Marcey Creek and Selden Island occur with moderate and low frequency respectively.

Cyromes

With the advent of the Accokeek phase a change is noted. "The settlement pattern observed in the Patuxent for the Accokeek phase represents a dramatic shift from the Marcey Creek phase. This shift is characterized by: (1) an increase in the number of components, (2) an increase in the amount of artifactual materials, and (3) the presence of shell-midden sites adjacent to the estuarine zone of the river (1980:96).^{Steponaitis} Steponaitis suggests a balanced utilization of interior, riverine and estuarine resources, by perhaps an increasingly sedentary population.

Popes Creek ceramics are relatively scarce in the drainage, and the sample from the Kettering site mirrors the pattern for the Patuxent. An increase in abundance of Mockley ceramics during the Selby Bay phase is also reflective of overall trends in the Patuxent (Steponaitis 1980). No Selby Bay points/knives were identified from the site.

Late Woodland components at this site deviate from the drainage pattern in having equal representation of Potomac Creek and Townsend wares. Although most of the Townsend^{ceramics} were small body sherds, no Townsend^{corded} Horizontal was in the collection.

Site Function(s)

The site's catchment area (all area within 10 km distance from the site) is primarily well-drained, gently sloping uplands. This places the site on the interface between the well-drained woodlands and the poorly-drained marshes immediately adjacent to the site, putting a wide variety of food resources within reach of the inhabitants. The site appears to have been primarily a short-term hunting and gathering locale, with possibly some longer term occupation or different activities during the Early and Middle Woodland. The scanty Popes Creek pottery is suggestive of an interior camp as the main base camps for Popes Creek are in the estuarine areas of the Potomac (Handsman and McNett 1974). There is also a possibility that pottery-making was occurring at the site, apparently associated with the Accokeek phase. The

site was periodically reoccupied, probably on a seasonal basis. Unfortunately the paucity of faunal remains limits the available information from this source.

SITE SIGNIFICANCE

The Kettering Park site must be evaluated on its scarcity, integrity, and its archeological research potential. This section of the Patuxent River drainage has not been systematically surveyed. Steponaitis (1980) did make an inventory of known collections and sites and developed a cultural chronology for this area as part of the Patuxent River drainage. In the summary of the site occupation it is evident that this site does not deviate significantly from the cultural pattern observed for the upper Patuxent region as a whole. Thus it appears that this site is probably fairly representative of prehistoric occupation of the interior coastal plain.

The integrity of the site appears to be very good. The upper 20-25 cm of the site have been disturbed by cultivation and construction, and its use as parkland; however, since the site has received accretional flood deposits the cultural remains around 25 cm and below appear to have good stratigraphic integrity. In particular the Accokeek component of the site appears to be excellently preserved.

The Accokeek phase is known in the Potomac and Patuxent valleys primarily through the work done by Stephenson and Ferguson (1963) at the Accokeek Creek site and by McNett and Gardner (1975) at the Monocacy site. Henry Wright obtained a radiocarbon date for an Accokeek component at Martins Pond site on the Severn River (1973). Also, testing by Thomas Mayr at the King I site on a tributary of the Patuxent River revealed an Accokeek component (Wright 1973). There are other sites with large Accokeek components reported, most of them on the Potomac or Chesapeake Bay, including the Loyd[✓] Retreat site and 18AN219, (Bill Barse, personal communication).

Given the small data base for the Accokeek phase, particularly for interior components, the research potential of the Kettering^{Park} site is quite high. Although features were not located with the Phase II testing, the

stratigraphic integrity suggests that features may be present. Even if features were not located, sampling the Accokeek component would provide a representative collection of artifacts associated with this phase, and would allow specific statements concerning activities taking place at the site (e.g. pottery-making). The types of lithic materials present would also shed light on the extent, direction and nature of trade and exchange systems operating in the Early Woodland relative to other periods.

Based on the site's integrity and high research potential, the Kettering Park site is considered to be eligible to the National Register of Historic Places.

RECOMMENDATIONS

The proposed dualization of Route 214 would encroach approximately 40 meters into the Kettering Park site (see Figure). Thus the planned highway construction would ^{diversity effect} (impact) approximately 2600 m² of the site, or slightly over one-half of its known extent. The preferred alternative is avoidance of the site. However, if avoidance is not feasible a mitigation strategy of intensive sampling is recommended, consisting of a stratified random sample of approximately 7% of the site. This would be accomplished by removing the plowzone/wash layer either mechanically or manually without sampling, then excavating level(s) immediately below in 2m by 2m units (65 units). The larger unit size would combine an effective sample size with increased efficiency in excavation. Artifacts would be provenienced by meter square. Finally, 10% of this sample (26 square meters) would be excavated to sterile subsoil to retain samples of other buried components, if present.

A cost and time estimate for a proposed mitigation strategy will be provided upon request.

APPENDIX I

PEDOLOGY AND GEOMORPHOLOGY OF THE
KETTERING PARK SITE (18PR174)

Prince Georges County, Maryland

G. Mathias Kondolf

SITE DESCRIPTION

The Kettering site is located on a low alluvial terrace, about 60 x 80 m, on the south side of Maryland Rte. 214 between Largo and Kolbes Corner (Figure I). The site, at the confluence of the Western and Northeastern Branches of the Patuxent River, is underlain by Quaternary fluvial sands and gravels of the Wicomico Formation (Cooke and Cloos, 1951). The surrounding coastal plain uplands are underlain largely by the Tertiary Agua greensand (a green glauconitic sand) and by less extensive outcrops of the Tertiary Chesapeake group (light grey diatomaceous earth and fine pebble sand) (Cooke and Cloos, 1951). Soils developed on the uplands are mapped as Collington fine sandy loams (Kirby et al. 1967). Stream gradients are gentle and relief is subdued. The site was once farmed, reforested, and recently partially cleared to leave an open, park-like stand of trees, primarily beech, of typically 25-30 cm diameter.

PARENT MATERIAL

The parent material upon which soil has formed consists primarily of well-sorted fine and medium sand, with lesser occurrences of gravelly sand, sandy gravel, and silty sand. The deposits are interpreted as fluvial deposits of the Western and Northeastern Branches, and possibly of a small tributary that drained the upland to the north and once joined the Northeastern Branch near the eastern margin of the site. A road now occupies this draw, so it is difficult to reconstruct the paleodrainage to assess the possible contribution of sediment from this stream to the alluvium at the site.

Changes in parent material size are believed to be responsible for the sharp contacts observed in some profiles (from sand to gravel, and from sand to silty sand). However, most soil development has occurred on a massive fine-medium well-sorted sand that extends to depths of 1 m in most profiles. This sand lacks evidence of primary sedimentary structure or textural change.

Fine sands deposited in the backwaters of major floods could be responsible for a massive primary depositional structure. Conceivably, the sand could have been deposited as one event. Alternately, sequential events could be responsible, with all primary stratification since lost to soil development.

Stratigraphic relations below the sand are complex. Gravels suggest that paleochannels (former channels) crisscrossed the site, but more deep holes would be required to map these former channels. A more recent gravel occurs at a depth of 40 cm in auger hole N80 W100. A fresh-looking fragment of glass was found here at a depth of 70 cm; it was dated as post-1923 on the basis of its lettering (a portion of "reuse of this bottle is prohibited...") and probably post-1950 on the basis of the quality of glass (Silas Hurry, personal communication). This gravel is overlain by 40 cm of thickened A horizon and appears to have been inset into the sloping terrace edge by a recent flood (see Figure I-5). Other gravels underlie the primary sandy unit and thus predate the sand and its pedogenesis.

PROCEDURE

To obtain the most usable information most efficiently, existing archeological test units were described and soil profile descriptions logged from shovel test pits (s.t.p.'s) on a 5m grid were adapted for use in stratigraphic cross sections. One line of auger holes was drilled along the W100 transect. In order to use the auger hole and s.t.p. data, 4 transects were levelled, two N-S (W100 and W115) and two E-W (N101 and N121). Locations of auger holes, s.t.p.'s, and soil pits used in this analysis are shown on Figure I-2. Although s.t.p.'s are shallow and thus do not yield data on underlying stratigraphy, they are important for determining the lateral extent of soil units.

Soils were described in the field for color, texture, and consistency. Given the scope of the project, no size analyses or other laboratory tests were performed.

Textural descriptions recorded by Kavanagh were adjusted to reflect the higher sand fractions observed in nearby holes; these adjusted textures are used in Figures I-5 and I-8).

PEDOGENIC DEVELOPMENT

The soil at the site is mapped as Bibb Silt-loam in the Prince Georges County Soil Survey (Figure I-3; Kirby et al. 1967). The description of this unit includes mention that, "In a few areas the surface layer contains medium sized sand and feels gritty" (Kirby et al. 1967:19). The Kettering Park site is such an area. The soils here are loamy sands and sandy loams. In most pits a cambic B and argillic B are developed. Parent material usually changes at the base of the B horizon.

Colors are quite red in the argillic B horizons, although color can vary dramatically from pit to pit. For example, pit N115 W105 is only a few meters from pit N118 W110, yet it is strikingly redder. Occasional thin clay skins are visible in the argillic B. Structure is generally weak to moderate in A, cambic B and argillic B horizons. Sands and gravels that underly or overly the soil may be massive and structureless.

A representative profile N118 W110 is shown in Figure 4. Recall that there is substantial variation from hole to hole, especially below about 80 cm depth.

Mottles are common below 80 cm depth, indicating that this site is poorly drained. Iron oxide cemented concretions (usually 80-100 cm) reflect the abundance of iron available from the weathering of the glauconite derived from the greensands of the uplands deposited at the site.

AGE AND STABILITY OF SOIL

Aside from the recently inset gravel (N80 W100), and the possibly recent deposition of sand over a now buried B horizon at N130 W75, the site appears to have been stable long enough that an argillic B horizon could develop. How long is that? To answer this question, we can refer to studies by other

workers who have used independent means (such as C^{14} isotopes) to date soils of varying stages of development. We must bear in mind, however, the rates of soil formation are influenced by climate, microclimate, drainage, parent material size and mineralogy, vegetation, and erosional or depositional modifications after onset of pedogenesis.

Many studies of soil formation rates are reviewed by Hall et al. (in press). Table 1, taken from their report, indicates that translocation of clay can occur in as little as 100 years or less (Hallberg et al. 1978). More comparable are the data of Bilzi and Ciolkosz (1977), indicating that illuvial clay is found after 2000 years of development on alluvium in the Pennsylvania Appalachians. Taken as a whole, these studies suggest that about 2000 years minimum are needed to develop an argillic B horizon.

At the Kettering site, the parent material is extremely sandy. This would serve to accelerate pedogenesis because the surface area to be weathered is less than in a finer-grained parent material. However, the site's low topographic position and consequent poor drainage would serve to slow pedogenesis by preventing optimal aeration.

The combination of red color and argillic B development suggest an age of 10,000 years B.P. ~~3~~⁴,000 (Jacobson, personal communication, 1983) for the main body of the site.

EROSION OF THE SITE

Pronounced thinning and thickening of the A horizon is apparent in Figure I-5. Several factors may have contributed to this phenomenon: erosion of the surface by sheet wash, trapping of sediment by tree roots, disturbance by plowing, and disturbance by heavy equipment.

Plow scars indicate that the site was once farmed, but it is now forested, primarily by beech trees 25-30 cm in diameter.

A cut stump of unknown species (not beech) and about 30 cm in diameter is located near the highway. Its 120 annual rings suggest that the present stand is well over a century in age. Some trees in the north-central and eastern part of the site are on mounds about 20 cm above the surrounding ground surface (see Figure I-2). Roots are fully or partially exposed on the mounds. It is unclear whether these mounds indicate lowering of the surrounding surface by erosion or raising of the mound by 1) accumulation of soil at the base of the tree or by 2) growth of tree roots and heaving the soil. Mounds are found not only under beeches, but under other trees as well. If the beech mound located at N131 W100 (Figure I-5) is representative, the thickening is restricted to the A horizon, suggesting either erosion of the surrounding surface or trapping soil at the tree base, not heaving.

Only 12 km east of the District of Columbia, the site is in an area that has undergone rapid urbanization over the past 25 years. Early 1960s aerial photography of the site (for SCS) shows the site and the adjacent floodplains of the Western and Northeastern Branches of the Patuxent were heavily forested. When the Kettering development was constructed, much of the floodplain was cleared of trees. On the alluvial terrace at the site, trees were thinned and the underbrush cleared out (Richard Naegele, surveyor, personal communication, 11 May 1983). A park now exists on the site. The heavy equipment used in creation of the park and removal of trees probably disturbed upper soil horizons.

EROSION OF SITE EDGE

The edge of the stable surface at the site is determined primarily by 1) road construction (on the north edge) and 2) fluvial erosion by the Northeast Branch (SE edge) and by the Western Branch (W edge). Paleocourses of the two streams are shown in Figure I-1. They are taken from the Lanham 7.5' Quadrangle, photorevised in 1979. It is clear that these channels formerly abutted the edges of the site. The old mill over the Western Branch and its mill pond (Figure I-1) do not appear on aerial photography from the early 1960s (photo base for Kirby et al. 1967) and are reported to have been put there as part of the landscaping for the Kettering development (Richard Naegele, surveyor, personal communication). Thus, it appears that the present

channels are artificial and that prior to development, the streams flowed along the edge of the site, where they could be expected to erode and deposit during high flows.

Pits, auger holes, and s.t.p. descriptions were examined for holes at the edges of the site. By correlating the described and dated gravel in test units N80 W100 with gravel and sand in s.t.p. descriptions, the extent of inset fluvial gravel and sand is reconstructed in Figure I-2, depicted by the solid line. The correlation is uncertain since the gravels and sands in the s.t.p.'s and described by Kavanagh (unpublished data) were not observed by the author. If this correlation is correct, the landward edge of the inset gravel represents the edge of erosion of the site. If the gravels described in s.t.p.'s are not modern and thus not correlative, then the edge of erosion of the site is farther south, depicted by the dashed line in Figure I-2.

SUMMARY AND CONCLUSIONS

The Kettering site, located on a low alluvial terrace, is underlain primarily by fine-medium well sorted fluvial sands, derived from greensand outcrops of the uplands. Occasional gravels underlie and predate the principal sandy unit, and modern gravels are inset along the southeast margin of the site, suggesting erosion of the bank and emplacement of a point bar by high flows on the Northeast Branch. A fresh fragment of glass (probably ca. 1950s or later) found in the gravel indicates that the event was recent.

Most pits show development of an argillic B horizon, with occasional thin clay skins and weak-moderate structure. The redness of these soils and the presence of an argillic horizon suggests a minimum age of 2000 years B.P., more probably 10,000 years B.P. \pm 4000 years.

As mentioned above, the southeast edge of the site has been eroded by the Northeast Branch. The A horizon of the site has been disturbed by plowing, heavy equipment, and possible sheetwash erosion or colluvial movement.

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